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ABSTRACT

The research summarized in this report was stimulated by the need for an objective, standardized measure of vocational maturity which would provide an empirical referrent for the conceptual terms of vocational development. The instrument constructed for this purpose is the Vocational Development Inventory (VDI), consisting of the Competence Test designed to assess the cognitive components of vocational maturity, and the Attitude Scale designed to operationally define the conative elements in vocational maturity. The Attitude Scale is the only part of the VDI that has been developed and extensively investigated over the past 8 years. To further study the Attitude Scale, the Vocational Development Project (VDP) was established to implement a program of four different, but interrelated types of research, including survey, technique, theoretical, and applied. A data bank has been maintained by VDP to collate and analyze the research findings and to disseminate them periodically to facilitate further research. From the research conducted thus far, it can be concluded that the Attitude Scale is a widely applicable, reliable, and valid measure of vocational maturity and that it enters into relationships with a number of variables indicating that it operationally defines the concept of vocational maturity. (Author/SB)

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Project No. 1537
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VOCATIONAL DEVELOPMENT AND VOCATIONAL EDUCATION IN ADOLESCENCE

John O. Crites
The University of Iowa
Iowa City, Iowa

December, 1969

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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John O. Crites
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Data collection was made possible through the cooperation of the students, teachers, counselors, principals, and research personnel, especially Drs. Ira J. Semler and George H. Ross, of the Cedar Rapids, Iowa school system. Findings of studies by other investigators have been made available through their commitment to systematic empirical research on the maturity of vocational attitudes.

SUMMARY

The research summarized in this report was stimulated by the need for an objective, standardized measure of vocational maturity which would provide an empirical referrent for the conceptual terms of vocational development theory (Ginzberg, et al., 1951; Super, 1957). The instrument constructed for this purpose is the Vocational Development Inventory, which consists of two parts--the Competence Test and the Attitude Scale (Crites, 1964). The former, which is designed to assess the cognitive components of vocational maturity, has not yet been completed; the latter, which is intended to operationally define the conative elements in vocational maturity, has been extensively investigated over the past eight years in a variety of studies (Crites, 1965b). Based upon a combination of the rational and empirical methods of test construction, the Attitude Scale was initially standardized upon large samples of male and female elementary and secondary students in grades five through twelve (Crites, 1965a). The findings from this first administration of the scale indicated that 50 items out of a pool of 100 were monotonically related to age/grade and that hence they met one of the necessary criteria for the measurement of a developmental variable (Crites, 1961). In addition, it was also found that: (1) the relationship of items to grade was stronger than it was to age; (2) there was a trend for item endorsements to change from True to False across grades; (3) there were "stages" in the item curves, principally at two points, viz., between the sixth and seventh grades and the ninth and tenth grades; (4) neither item type (i.e., whether stated in 1st or 3rd person singular) nor response format (5-point scale or T-F option) affected differentiation between age or grade; and, (5) a subset

of items which were unrelated to age or grade and which elicited deviant responses might constitute an index of vocational maladjustment.

To further study the Attitude Scale, the Vocational Development Project (VDP) was established to implement a program of four different, but interrelated, types of research: survey, technique, theoretical, and applied. Survey research was conducted to identify the parameters of vocational attitude maturity and provide normative data for the interpretation of the Attitude Scale. Technique research was undertaken in order to investigate the psychometric characteristics, e.g., reliability, response bias, and "validity", of the Attitude Scale. Theoretical research was designed to test hypotheses deduced from vocational development theory concerning the relationship of vocational attitudes to background, psychological, and outcome variables. And, applied research was pursued to evaluate the effects of certain treatment variables, such as counseling and informational experiences, upon the maturity of vocational attitudes. Data were collected not only by VDP but also by other investigators who studied the Attitude Scale in relation to many and diverse variables. A Data Bank has been maintained by VDP to collate and analyze the findings of these studies and to disseminate them periodically to facilitate further research on vocational attitude maturity. At present, over 50 investigations with the Attitude Scale have been completed and approximately the same number are currently in progress. Several of these studies are longitudinal, including VDP, but, with only a few exceptions, e.g., test-retest reliability estimates, the findings which have thus far been reported are cross-sectional.

These findings can be classified and summarized according to the type of research they represent:

Survey Research:

1. Descriptive statistics on Attitude Scale scores within grades indicate that central tendencies and dispersions vary considerably from one sample to another, depending upon their composition and background, but that there is sufficient "ceiling" on the scale for it to be applicable to as advanced educational levels as the senior year of college.

2. These differences within grades are not sufficiently large, however, to overdetermine the differences between grades. There is a progressive increase in mean Attitude Scale scores from the lower to the higher grades.

3. Curricular groups at the same educational level have been found to differ in the maturity of their vocational attitudes, with those students in the more vocationally-oriented courses of study being the less mature.

4. Similarly, adolescents from less favored socioeconomic circumstances and/or minority ethnic and racial groups are less vocationally mature. Thus, the Attitude Scale scores of disadvantaged youth, American Indians, Mexican-Americans, and Negroes are significantly lower than the general norms.

Technique Research:

1. Item analyses of the Attitude Scale have yielded biserial correlation coefficients which indicate that the scale is probably factorally complex, presumably because the items were written to define five different clusters of attitudes. Factorial studies of the scale are in process, but have not yet been completed. The Kuder-Richardson Formula 20 estimates range from .60 to .79 for different grades, with most of them in the .70s.

2. Studies of response bias as a potential source of error in the

Attitude Scale have yielded largely negative results. Neither response set nor response style contributes appreciably to total score variance in the scale, and that which is present apparently does not influence the relationships of the scale to other variables.

3. Internal consistency coefficients for the Attitude Scale average .74 across grades and are consistent with the results of the item analyses: both reflect the multidimensionality of the scale. For a period of one year, test-retest reliability was estimated at .71, with a standard error of measurement of 3.12.

4. An analysis of the "content" validity of the Attitude Scale has demonstrated that expert judges (counseling psychologists) can agree not only among themselves (80 per cent) on what constitutes a vocationally mature response to the items of the Attitude Scale but also with the empirically-derived scoring key (74 per cent).

5. Findings on the "criterion-related" validity of the Attitude Scale further support its usefulness as a measure of dispositional response tendencies in vocational maturity, the accumulated research indicating that it is related to vocational aspiration, vocational choice, and readiness for vocational planning.

Theoretical Research:

1. Studies of the Attitude Scale in relation to background or stimulus variables have yielded largely negative findings. Vocational attitude maturity is apparently not related to socioeconomic status, number of siblings, or previous work experience. Parental educational level, however, may be a correlate, but additional data on it are needed.

2. Evidence on the relationship of the Attitude Scale to measures of intellective variables, e.g., intelligence or scholastic aptitude tests,

reveals low- to moderate-positive correlations, the _r_s ranging from the upper .20s to the lower .40s.

3. Likewise, data on the Attitude Scale in relation to nonintellective variables, such as personality characteristics and general adjustment status, indicate that the more vocationally mature are more task-oriented and better adjusted.

4. Outcome variables--those which involve interaction between an individual's vocational maturity, on the one hand, and reality demands, on the other--related to the Attitude Scale include scholastic achievement, persistence in college, success in vocational training, and job success.

5. Correlational and factorial analyses have also established that maturity of vocational attitudes is one dimension of a construct of adolescent general adjustment which encompasses the academic, intellectual, philosophical, and vocational aspects of development during the high school years.

Applied Research:

1. Of the studies which have investigated the effects of counseling upon vocational attitude maturity, three have produced positive findings and four have reported negative results. All need to be replicated or extended to improve controls and eliminate methodological flaws before any definitive conclusions can be drawn. There does seem to be some reliable evidence, however, that both individual and group counseling are efficacious in increasing the maturity of vocational attitudes.

2. Much the same conclusion can be drawn about the effectiveness of informational and instructional experiences. A college orientation program resulted in marked gains in vocational maturity, but an occupa-

tions course and life career game did not.

To summarize the present status of this survey, technique, theoretical, and applied research on the maturity of vocational attitudes, with the caveat that the evidence is largely cross-sectional, it would seem justified to conclude (1) that the Attitude Scale is a widely applicable, reliable, and "valid" measure of the dispositional factor in the construct of vocational maturity and (2) that it enters into relationships with a member of theoretical and applied variables, thus indicating that it operationally defines a concept which is both linguistically meaningful and empirically significant.

That further research on the Attitude Scale should be conducted, however, is apparent from some of the issues which have been raised by previous findings. Several lines of inquiry can be extrapolated: studies of discrimination learning as a basic process underlying the maturation of vocational attitudes; additional analyses of the intellective factor in vocational attitude maturity; identification of background variables, such as parental attitudes, which may be related to the maturity of vocational attitudes; and, investigations with improved designs of the treatment conditions which facilitate the acquisition and development of mature vocational attitudes. In short, future research on the Attitude Scale should most likely be theoretical and applied in nature; most of the survey and technique research, with the possible exception of the factor analyses now in progress, has been conducted. Moreover, there probably should be an increasing emphasis upon experimental studies of vocational attitude maturity, whether in the field or the laboratory, if the salient variables related to this concept are to be unequivocally isolated. Once the empirical laws governing the formation and maturation of vocational attitudes have been established, a foundation will have been laid upon which to build a theory of vocational development, in which the logical- and data-language levels may be more meaningfully interrelated.

CHAPTER 1

INTRODUCTION

During the past decade and a half, theory construction in vocational psychology has burgeoned: at least fifteen conceptual and explanatory schemata of vocational choice and adjustment phenomena have been formulated, ranging from the "linear passive" systems of the economists and occupational sociologists, through the motivational constructions of the psychoanalysts, to the largely ahistorical models of the decision theorists (Crites, 1969, Ch. 3). But, by far the most prominent emphasis in these speculative efforts has been that upon the developmental nature of how and why individuals choose and adjust to occupations as they do. Proposed by Ginzberg, *et al*. (1951),[1] propagated by Super (1953; 1955; 1957; 1963), and pursued by others, notably Tiedemann (1961; Tiedemann & O'Hara, 1963), vocational development theory has gained widespread acceptance and application among researchers and practioners alike. In contrast to the atheoretical, "dustbowl" empirical character of the Matching Men and Jobs approach, which prevailed before 1950, the focus of contemporary vocational psychology is largely upon conceiving, clarifying, revising, and restating the principles, usually deduced from developmental and self psychology, which govern the course and stages in career decision-making and patterning from early adolescence to late adulthood (Super, Holland, Osipow, Campbell, R.E., Westbrook, Resnikoff, O'Hara, & Bingham, 1969).

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[1] This group was the first to articulate a comprehensive statement of vocational development theory and to gather data, albeit subjective and qualitative, on its principal propositions. There were several precursors to the work of Ginzberg and his associates, however, the most relevant being the early studies of interest development by Carter (1940) and the paper on "Maturation and Vocational Guidance" by Dysinger (1950).

The value of this shift in the substantive interests of the field, the need for which was first identified by Ginzberg (1952), has been noticeably mitigated, however, by the gap that has developed between the construction of theory and the production of research. This discrepancy between the conceptual- and data-language levels prompted Wrenn (1959, p. 94; italics in original), over ten years ago, to comment that: "The value of a theory lies not only in its psychological or other rationale, perhaps not mainly in this at all, but in its capacity to generate research.... We need theories which will help us in the process of ordering our observations and testing our inferences from them." Similarly, Borow (1961, p. 24) has observed that: "The charge can be made that some workers in the field have found it so edifying to work on conceptual problems that they have lost all zest for going out to observe how youth grows up and comes to maturity in a vocational matrix. Our lack of first-rate descriptions and of normative data is most serious." More recently, from a survey and summary of empirical findings on the development of vocational choice, Crites (1969, p. 198) concluded that: "We have a fairly comprehensive conceptual framework of the stages through which an individual supposedly passes in arriving at a choice, but only a few of the objective details are filled in.... The most striking conclusion which emerges from this review of theory and research on the stages in the choice process is that theory has far outstripped research."

Why this disjunction has arisen can probably be attributed to many factors, e.g., the time needed to conduct longitudinal studies, the availability of subjects, the inadequacy of research resources, etc., but not the least among these, and possibly the most important, is the lack of appropriate measuring instruments for the central concepts in vocational development theory. Most of the terms in the propositions which have been proffered concerning the choice and adjustment process, while they have been described verbally, have not been defined operationally. Thus, such constructs and variables as compromise (Ginzberg, et al., 1951), coping mechanisms (Bordin, Nachmann, & Segal, 1963), differentiation and integration (Tiedeman & O'Hara, 1963), means-end cognizance, time projection, and other choice competencies (Crites, 1964), and synthesis (Super, 1956) have not been given explicit empirical referents. Reflecting upon the need for operational definitions of these and similar concepts, Borow (1961, pp. 23-24) points out that:

> "We must learn to make a much clearer separation between observation terms and hypothetical terms in talking about career development (Borow, 1956; Bugelski, 1960). In this connection, we shall have to strive to erect some workable coordinating definitions that will link data-based variables to noninstantual variables as, for example, the link between verbally expressed vocational indecision and inferred role conflict."

In other words, measures of vocational development variables must be both theoretically meaningful and psychometrically sound (Astin, 1964; Crites, 1965a).

That some progress has been made in constructing measures which meet these desiderata for those few variables that have been operationally defined is evidenced by the work of the Career Pattern Study (Super, et al., 1957; Super & Overstreet, 1960) on the Indices of Vocational Maturity

(IVM) and the research of Gribbons and Lohnes (1968) on the Readiness for Vocational Planning (RVP) scales. Both these approaches to the measurement of vocational maturity have been conceptually relevant; what shortcomings they may have are primarily psychometric. For example, both have relied upon interviews, either open-ended (IVM) or semi-structured (RVP), for data collection, and consequently, as compared to a standardized paper-and-pencil inventory, they cannot be scored as objectively or rapidly and they cannot be administered to large samples as conveniently or economically. But more importantly, both have used the traditional longitudinal design of collecting data initially on only one group of subjects at one point-in-time, the ninth grade for IVM and the eighth grade for RVP, rather than several groups of subjects at several points-in-time, e.g., eighth through twelfth. As a result, it could not be determined until follow-up, usually several years later, whether the vocational behaviors observed on the first occasion were related to those on subsequent occasions. In general, these relationships for both IVM and RVP were quite low, being mostly in the .20s (Crites, 1969, p. 200; Gribbons & Lohnes, 1968, p. 32).[2] Psychometrically adequate measures of

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[2] Gribbons and Lohnes (1968, pp. 33-34) have also reported canonical correlations of .59 and .48 for RVP between the eighth and tenth grades. It should be recognized, however, that these coefficients represent the maximal estimate of correlation between the two sets of scores when they are optimally weighted linear functions. The zero-order *rs* are still low positive.

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vocational maturity, however, should bear substantial as well as systematic (linear or monotonic) relationships to time, i.e., either age or grade (Crites, 1965a).

To devise such measures and to conduct relevant research with them, the Vocational Development Project (VDP) was initiated at the University of Iowa in 1961. During its first three years, VDP was focused almost entirely upon instrumentation:

"The purpose of this stage in the overall research project, which [was to] be followed by others on theory testing and practical applications, was twofold: first, the basic objective was to construct and standardize a measuring procedure which would operationally define one of the more potentially useful concepts in the various theories of vocational development. Because of its comprehensiveness as an abstraction of several developmental principles, e.g., the increasing goal directedness, independence, and realism of vocational behavior (Super & Overstreet, 1960), and because it enters into a large number of theoretical propositions, the concept of vocational maturity was selected as the one which appeared to have the greatest promise for further definition and measurement. Second, a more general goal which it was hoped could be attained through the analysis and assessment of vocational maturity was to make a contribution to theory and methodology on the measuerment of developmental variables. A commitment was made to incorporate and evaluate as many of the newer psychometric principles (e.g., Berg, 1959; Fiske & Butler, 1963; Ghiselli, 1963) as possible in designing a multidimensional test for the behaviors subsumed by the concept of vocational maturity" (Crites, 1965a, p. 3).

The general design of VDP, in order to accomplish these goals, was to gather data both cross-sectionally and longitudinally on large samples across a wide age/grade range during adolescence and youth (see Figure 1).

Initial Findings of the Vocational Development Project

The instrument with which the first data in this design were collected has been called the Attitude Scale[3] of the *Vocational Development Inventory* (VDI).[4] Its items were written from statements made by clients in vocational counseling and concepts proposed in vocational development theory (Crites, 1964) to represent the dispositional response tendencies which are defined by the following variables: (1) involvement in the process of vocational choice, (2) orientation toward the problem of vocational choice, (3) independence in decision-making, (4) preferences for factors in vocational choice, and (5) conceptions of vocational choice. In its initial form, the Attitude Scale was comprised of 100 items, half of which were stated in the first person and half in the third person singular (see Appendix A), and was administered with two response formats, one a 5-point Likert-type scale and the other a True-False option, in order to assess the effects of these variations in its substantive and

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[3] This scale was originally entitled the Concept Test and then the Attitude Test. The term *scale*, however, seems to describe its content and format more precisely.

[4] A companion measure to the Attitude Scale which is currently being constructed is the Competence Test, which consists of five parts: Goal Selection, Occupational Information, Planning, Problems, and Self-knowledge (Crites, 1964).

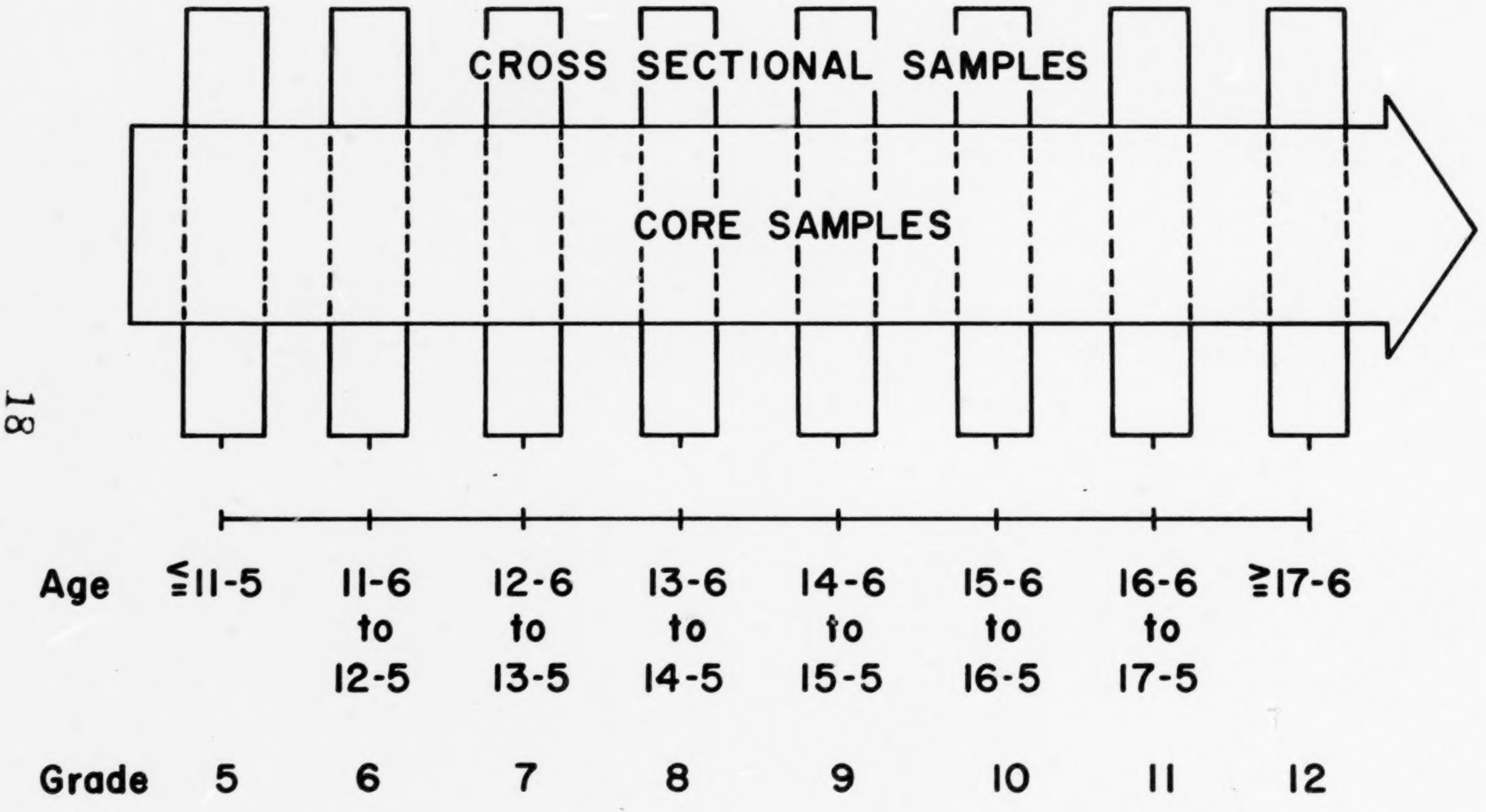

Fig. 1. Sampling design for standardization of the Attitude Scale.

formal characteristics upon item selection (Crites, 1965a). The standardization sample used for the first round of testing with the Attitude Scale consisted of 2822 Ss, about equally divided by sex, in grades 5 through 12 of the Cedar Rapids, Iowa, school system. The age range of the sample was from approximately 11 years to 17 years. Using analysis of variance and t-tests, item means for both the 5-point and T-F versions of the Attitude Scale were compared across the age and grade groupings. If an item related montonically, i.e., its means either increased or decreased with no statistically significant reversals, to these indices of time, it was provisionally accepted for the scale, the plan being to further evaluate the items against the same criterion when longitudinal data were available from yearly follow-up testings.

The major results from this initial standarization of the Attitude Scale can be briefly summarized as follows (Crites, 1965a):

1. Neither item type (1st or 3rd person singular) nor response format (5-point scale or T-F option) made any difference in item differentiation between age or grade.

2. Fifty out of the pool of 100 items were monotonically related to both age and grade, but the relationship was stronger with the latter, and consequently those items which were associated with grade were chosen for the Attitude Scale.

3. Item endorsements for most items (43 out of 50) followed a trend from a preponderance of True responses in the lower grades to a majority of False response in the upper grades, the reason being that the items were largely statements of immature attitudes (see the section on "Technique Research" for a fuller discussion of this point).

4. Of the 50 items, 30 exhibited "stages", as defined by significant

differences between adjacent grade levels, which corresponded to the divisions in the educational structure of the school system. Since the latter was of the 6-3-3 type, the stages occurred primarily between the sixth and seventh grades and the ninth and tenth grades, as depicted graphically for a typical item in Figure 2.

5. Ten items were found which had two characteristics in common: they were not related to grade, and 20% or less of the sample in each grade endorsed them in a way opposite to that of the majority response. In other words, these items appeared to assess what Berg (1959) has called "deviation response" tendencies, and consequently they were constituted into a so-called D scale for further study as possible measures of vocational maladjustment as contrasted with vocational maturity.

Supplementary analyses indicated that differences between males and females and between schools within grades were negligible; that the percentages of overlap between grades, with the exception of 10 and 11 which was 50%, were all in the 30s; and, that the D scale correlated -.20 (.001 level) with Attitude Scale total score, suggesting that the less vocationally mature are the more deviant in their responses.[5]

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[5] A set of four items, the content of which seemed to evince a tendency for "regression at a choice point" in vocational development, was also identified. These items, e.g., "Sometimes I wish I never had to work", were answered by eleventh and twelfth graders like those in the lower grades rather than like senior high school students. Apparently, being upon the threshold of leaving the familiar environment of the school and faced with the uncertainties of further training or work,

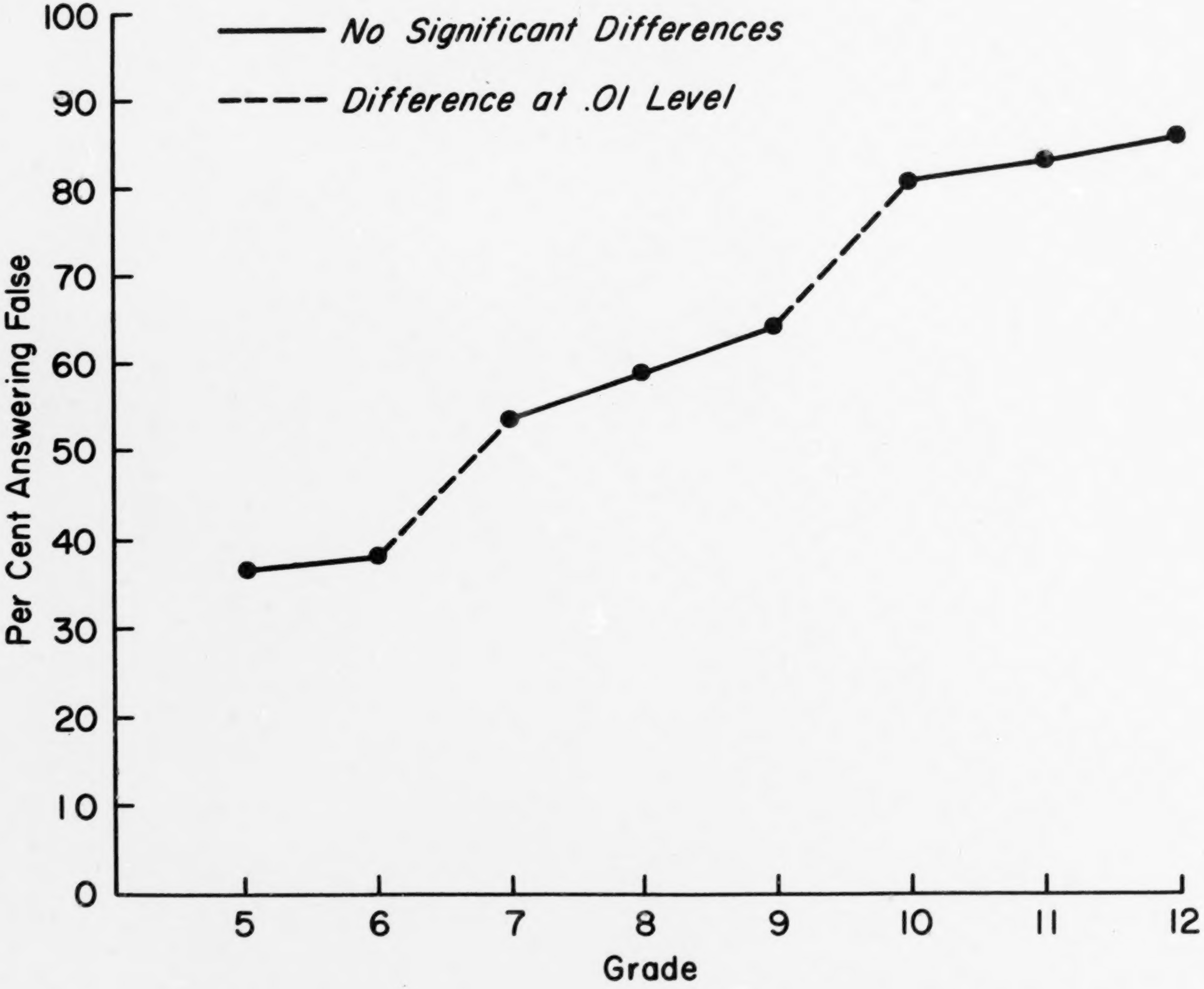

Fig. 2. Stages in responses to a typical Attitude Scale item.

they regressed to immature attitudes that expressed their insecurity. No further research has been conducted, however, on this hypothesis.

The initial findings of VDP, as well as those which were reported by other investigators through 1964, are depicted graphically in Figure 3. The left side of this "branching chart" represents the results which were obtained in the cross-sectional standarization of the Attitude Scale and the discovery of the D scale discussed above. The right side of the diagram lists studies which were in process or planned (broken lines) by VDP and investigations conducted by others. These studies were designed to cover a range of problems from the accumulation of normative data on the Attitude Scale, through analyses of its internal structure, reliability, and correlates, to its usefulness as a criterion measure for evaluating the effectiveness of vocational counseling (Crites, 1964). The Attitude Scale was also included as one of a battery of assessment devices used in the Specialty Oriented Student project (Hoyt, 1962), the purpose of which was to test students in trade schools, technical institutes, and business colleges and then to follow them up into the world-of-work, gathering data on their subsequent vocational adjustment and relating them to the predictors. Thus, the first phase of VDP came to a close with the prospect of a broadening research base upon which many interrelated studies of vocational maturity might be undertaken.

Current Research Program of the Vocational Development Project

As presently constituted, VDP might best be described as a "program of research", exactly because the problems which are being investigated by it and others are logically and temporally interrelated. The nature

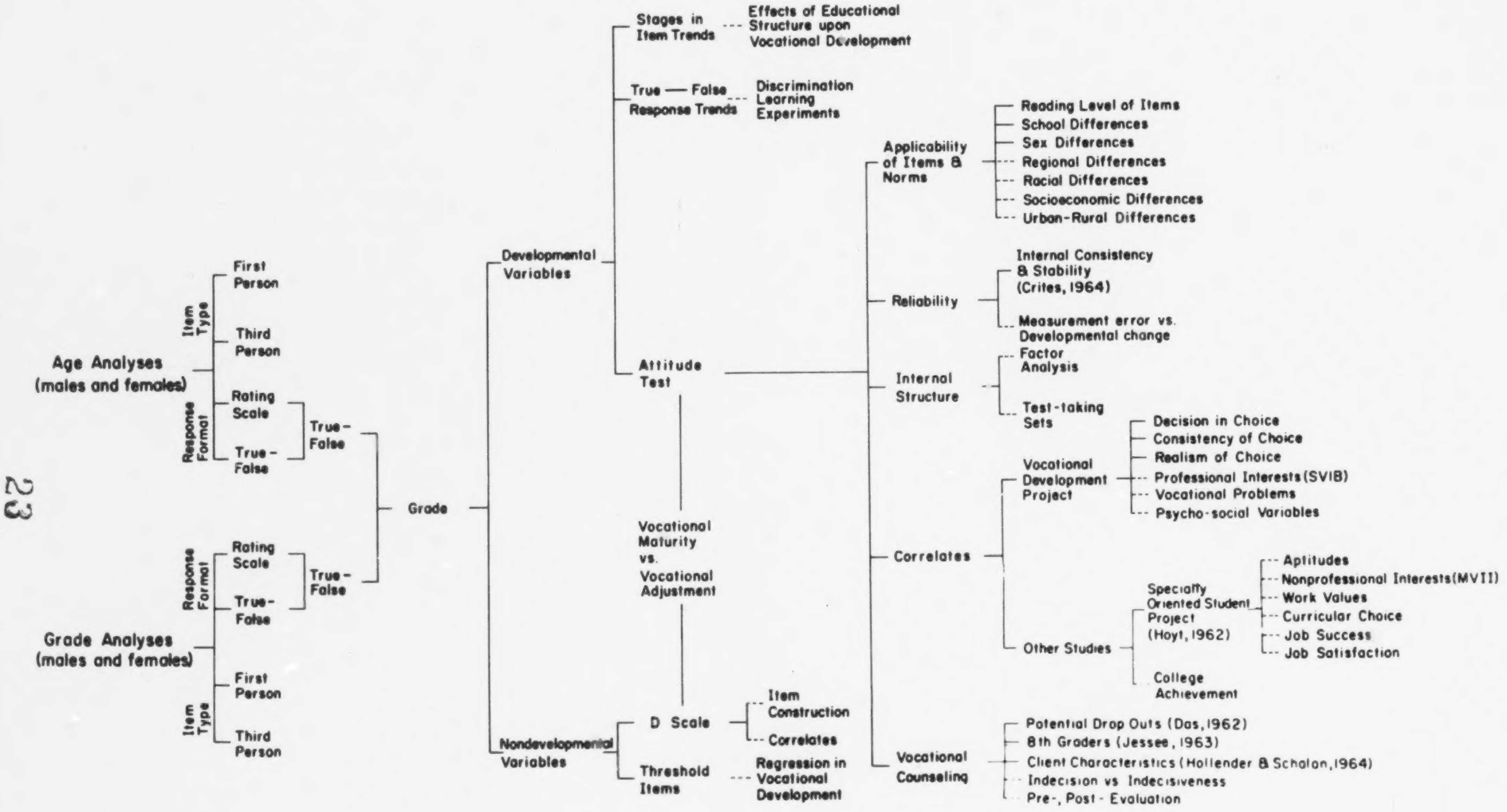
Age Analyses (males and females)
Item Type
First Person
Third Person
Response Format
Rating Scale
True-False
True-False
Grade Analyses (males and females)
Response Format
Rating Scale
True-False
True-False
Item Type
First Person
Third Person
Grade
Developmental Variables
Stages in Item Trends
Effects of Educational Structure upon Vocational Development
True — False Response Trends
Discrimination Learning Experiments
Attitude Test
Vocational Maturity vs. Vocational Adjustment
Nondevelopmental Variables
D Scale
Item Construction
Correlates
Threshold Items
Regression in Vocational Development
Applicability of Items & Norms
Reading Level of Items
School Differences
Sex Differences
Regional Differences
Racial Differences
Socioeconomic Differences
Urban-Rural Differences
Reliability
Internal Consistency & Stability (Crites, 1964)
Measurement error vs. Developmental change
Internal Structure
Factor Analysis
Test-taking Sets
Correlates
Vocational Development Project
Decision in Choice
Consistency of Choice
Realism of Choice
Professional Interests (SVIB)
Vocational Problems
Psycho-social Variables
Other Studies
Specially Oriented Student Project (Hoyt, 1962)
Aptitudes
Nonprofessional Interests (MVII)
Work Values
Curricular Choice
Job Success
Job Satisfaction
College Achievement
Vocational Counseling
Potential Drop Outs (Das, 1962)
8th Graders (Jessee, 1963)
Client Characteristics (Hollender & Scholon, 1964)
Indecision vs Indecisiveness
Pre-, Post-Evaluation

Fig. 3. Summary of initial findings of the Vocational Development Project.

and course of this programmatic research can be explicated by reference to Figure 4, in which there are two criteria of classification for defining and ordering the stages in the process of studying some aspect of vocational maturity. Consider the dimension type of research first, which has been adopted from Edwards and Cronbach (1952) and Edwards (1954). They have proposed that there are four kinds of research which can be conducted, depending upon what the purpose of a study is:

1. Survey research: to discover relevant variables for more systematic study and to establish the parameters of known variables.

2. Technique research: to develop methods, whether test or nontest, for making observations which are quantifiable.

3. Theoretical research:[6] to test hypotheses which have been deduced from theories or which have been formulated to account for empirical laws.

4. Applied research: to determine what course of action should be taken.

Table 1 ennumerates some of the problems and hypotheses that might be formulated and studied in each of these categories.

The other dimension of Figure 4, setting of research, simply refers to where studies are conducted and how much control is usually exercised over variables other than those of primary interest in the investigation. Field research is typified by any study in which data on subjects are

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[6] Originally termed "critical" research by Edwards and Cronbach (1952), this designation has been changed to more accurately represent the intent of hypothesis-testing research.

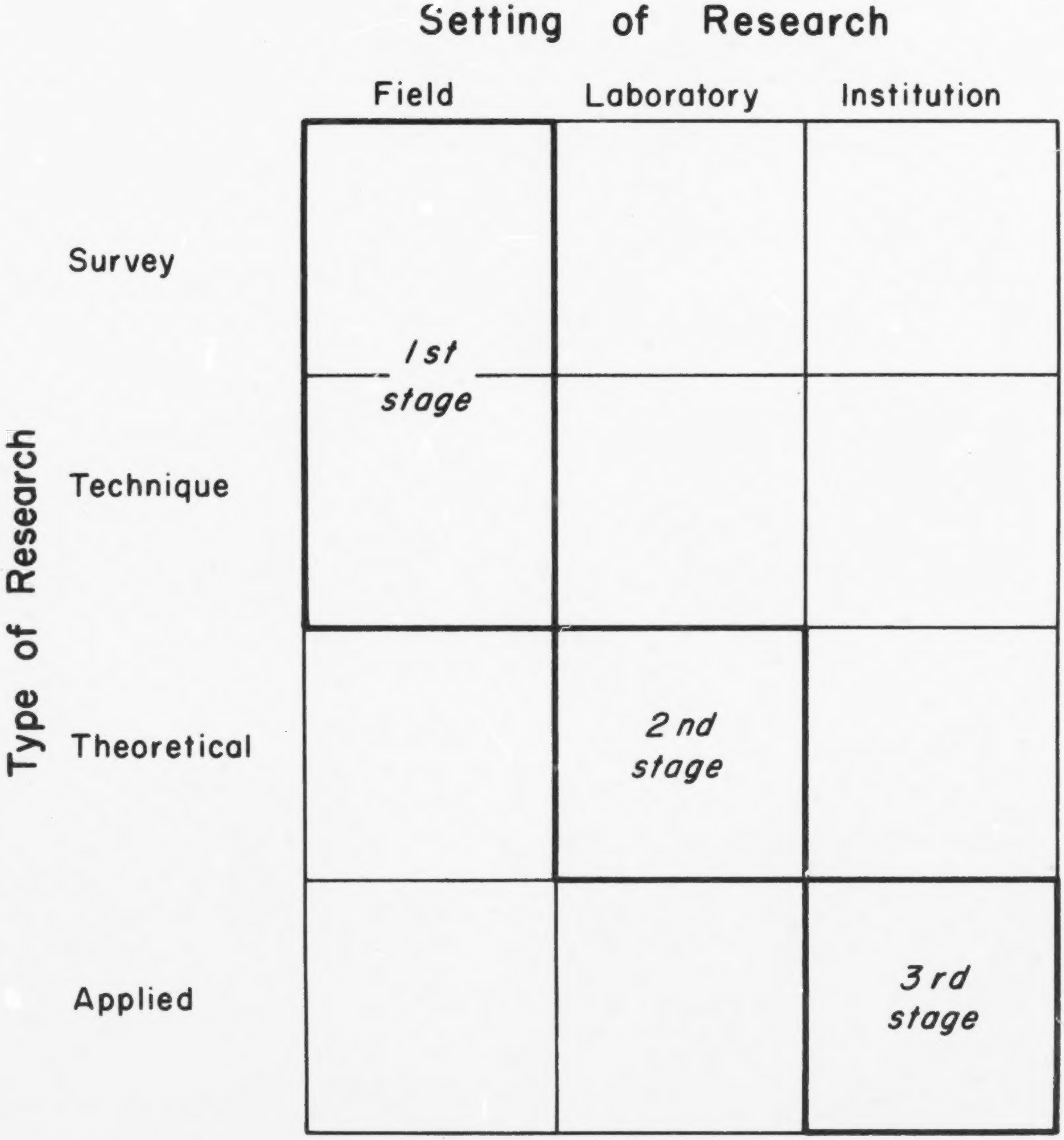

Fig. 4. Stages in programmatic research of the Vocational Development Project.

TABLE I
SUMMARY OF PROBLEMS AND HYPOTHESES OF THE VOCATIONAL DEVELOPMENT PROJECT

	PROBLEMS	HYPOTHESES
SURVEY RESEARCH	TO DETERMINE THE DIMENSIONS AND PARAMETERS OF VOCATIONAL DEVELOPMENT PHENOMENA: ----WHAT VOCATIONAL BEHAVIORS DEVELOP AS THE INDIVIDUAL MATURES? ----WHICH IS THE MOST SIGNIFICANT VARIABLE IN THE DEVELOPMENT OF VOCATIONAL BEHAVIORS--AGE OF GRADE?	THERE ARE SEVERAL VOCATIONAL BEHAVIORS, E.G., CONSISTENCY, INDECISION, AND REALISM IN VOCATIONAL CHOICE, WHICH MIGHT BE MONOTONICALLY RELATED TO TIME (AGE OR GRADE) AND HENCE MIGHT BE CONSIDERED TO BE DIMENSIONS OF VOCATIONAL DEVELOPMENT. OTHER VOCATIONAL BEHAVIORS WHICH MAY ALSO DEVELOP ARE: CERTAINTY, RANGE, AND SPECIFICITY OF VOCATIONAL CHOICE, AND SATISFACTION WITH VOCATIONAL CHOICE.
	----ARE THERE GROUP DIFFERENCES IN THE DEVELOPMENT OF VOCATIONAL BEHAVIOR, OR ARE GROUP TRENDS SIMILAR?	VOCATIONAL DEVELOPMENT PHENOMENA ARE GENERAL IN NATURE, I.E., THEY ARE NOT SPECIFIC TO ANY PARTICULAR GROUP, SUCH AS MALES OR FEMALES.
TECHNIQUE RESEARCH	TO CONSTRUCT A STANDARDIZED MEASURE OF VOCATIONAL MATURITY IN LATE CHILDHOOD, ADOLESCENCE, AND EARLY ADULTHOOD: ----FURTHER DEVELOPMENT AND STUDY OF THE ATTITUDE TEST OF THE VOCATIONAL DEVELOPMENT INVENTORY. ----CONSTRUCTION AND STANDARDIZATION OF THE COMPETENCE TEST OF THE VOCATIONAL DEVELOPMENT INVENTORY. ----INTERRELATIONSHIPS OF THE ATTITUDE AND COMPETENCE TESTS, AND OTHER VOCATIONAL BEHAVIORS.	THE GENERAL HYPOTHESIS WHICH UNDERLIES THE CONSTRUCTION OF THE SUBTESTS OF THE VOCATIONAL DEVELOPMENT INVENTORY IS THAT THIS INSTRUMENT WILL MEASURE VOCATIONAL BEHAVIORS WHICH MATURE AS THE INDIVIDUAL GROWS OLDER OR PROGRESSES IN SCHOOL. OTHER HYPOTHESES WHICH WILL ALSO BE TESTED PERTAIN TO THE PSYCHOMETRIC CHARACTERISTICS OF THE VDI. STUDIES WILL BE MADE OF ITS FACTORIAL STRUCTURE, ITEM CONTENT, AND FORMAT, INTERNAL CONSISTENCY, STABILITY, SUSCEPTIBILITY TO TEST-TAKING SETS, AND VALIDITY. FINALLY, IT WILL BE RELATED TO THE OTHER HYPOTHESIZED DIMENSIONS OF VOCATIONAL DEVELOPMENT, AS SHOWN IN FIGURE 9, TO DETERMINE WHETHER VOCATIONAL MATURITY IS A CONSTRUCT COMPRISED OF SEVERAL RELATED VARIABLES OR NOT.

TABLE I (CONT'D)
SUMMARY OF PROBLEMS AND HYPOTHESES
OF THE VOCATIONAL DEVELOPMENT PROJECT

	PROBLEMS	HYPOTHESES
THEORETICAL RESEARCH	TO TEST HYPOTHESES ABOUT THE NATURE AND COURSE OF VOCATIONAL DEVELOPMENT WHICH HAVE BEEN DEDUCED FROM THEORIES OR INFERRED FROM EMPIRICAL FINDINGS:	
	----EVALUATION OF THE ASSUMPTION MADE BY GINZBERG, ET AL. (1951) AND SUPER (1953) THAT THE PROCESS OF VOCATIONAL DEVELOPMENT IS A CONTINUOUS ONE.	THE MOST REASONABLE HYPOTHESIS ABOUT THE CONTINUITY OF VOCATIONAL DEVELOPMENT, IN LIGHT OF GESELL'S FINDINGS, MAY BE THAT THE OVERALL TREND IN THE MATURATION OF VOCATIONAL BEHAVIORS IS CONTINUOUS, BUT THAT THERE MAY BE SIGNIFICANT REVERSALS AT CERTAIN POINTS-IN-TIME WHEN EXTERNAL FACTORS, SUCH AS THE TRANSITION FROM ELEMENTARY TO JUNIOR HIGH SCHOOL, MAY MOMENTARILY PRODUCE A REGRESSION TO EARLIER BEHAVIORS.
	----ANALYSIS AND CLASSIFICATION OF THE STAGES IN VOCATIONAL DEVELOPMENT WHICH GINZBERG, ET AL. (1951) AND OTHERS HAVE DELINEATED. ----INVESTIGATION OF THE RELATIONSHIP BETWEEN EARLIER AND LATER VOCATIONAL DEVELOPMENT (SUPER, ET AL., 1957).	THE GENERAL HYPOTHESIS IS THAT THERE ARE STAGES IN VOCATIONAL DEVELOPMENT WHICH HAVE CLEARLY DEFINED BEGINNINGS AND ENDINGS AND WHICH ARE CHARACTERIZED BY THE PRE-EMINENCE OF CERTAIN BEHAVIORS. AND, THERE IS THE FURTHER HYPOTHESIS THAT "SUCCESS WITH THE TASKS OF ONE STAGE (SUCH AS OCCUPATIONAL CHOICE) IS RELATED TO SUCCESS WITH TASKS IN LATER STAGES (SUCH AS JOB ADJUSTMENT)".
	----CORRELATION OF VOCATIONAL DEVELOPMENT WITH EMOTIONAL, INTELLECTUAL, PHYSICAL, AND SOCIAL DEVELOPMENT (SUPER, 1955). ----RELATIONSHIP OF VARIOUS PSYCHOSOCIAL VARIABLES, SUCH AS FAMILY ATTITUDES, PERSONALITY ADJUSTMENT, AND SOCIO-ECONOMIC STATUS TO VOCATIONAL MATURITY (SUPER, ET AL., 1957).	ONE HYPOTHESIS ABOUT THE CORRELATES OF VOCATIONAL DEVELOPMENT STEMS FROM THE PROPOSITION THAT "VOCATIONAL DEVELOPMENT IS A SPECIAL ASPECT OF GENERAL DEVELOPMENT". THE PREDICTION WHICH FOLLOWS FROM THIS GENERALIZATION IS THAT VOCATIONAL DEVELOPMENT SHOULD BE RELATED TO EMOTIONAL, INTELLECTUAL, PHYSICAL AND SOCIAL DEVELOPMENT. ANOTHER HYPOTHESIS SPECIFIES THAT VOCATIONAL DEVELOPMENT SHOULD ALSO BE RELATED TO CERTAIN NONDEVELOPMENTAL STATUS VARIABLES, PARTICULARLY SUCH ANTECEDENT CONDITIONS AS FAMILY INTERPERSONAL ATMOSPHERE (ROE, 1957).

TABLE I (CONT'D)
SUMMARY OF PROBLEMS AND HYPOTHESES
OF THE VOCATIONAL DEVELOPMENT PROJECT

	PROBLEMS	HYPOTHESES
APPLIED RESEARCH	TO IDENTIFY THE BEST METHODS AND PROCEDURES FOR FACILITATING VOCATIONAL DEVELOPMENT IN ADOLESCENCE: ----WHAT IS THE UTILITY OF THE ATTITUDE TEST IN "CHECK-POINTING" THE VOCATIONAL DEVELOPMENT OF ELEMENTARY, SECONDARY, AND COLLEGE STUDENTS WHO ARE PROGRESSING NORMALLY IN THE MATURATION OF THEIR VOCATIONAL BEHAVIOR? ----HOW USEFUL IS THE ATTITUDE TEST IN SCREENING ELEMENTARY, SECONDARY, AND COLLEGE STUDENTS WITH DELAYED OR IMPARIED VOCATIONAL DEVELOPMENT FOR GUIDANCE AND COUNSELING SERVICES?	THE HYPOTHESIS TO BE TESTED IN RESEARCH ON "CHECK-POINTING" AND SCREENING THE VOCATIONAL DEVELOPMENT OF STUDENTS IS THE PRACTICAL ONE OF WHETHER AN INSTRUMENT LIKE THE ATTITUDE TEST CAN IMPROVE UPON THE IDENTIFICATION OF STUDENTS WITH VOCATIONAL PROBLEMS OVER THE BASE RATES FOR THESE PROBLEMS. IN OTHER WORDS, THE EXPECTATION IS THAT THE TEST HAS A HIGHER HIT-MISS RATIO IN CLASSIFYING STUDENTS AS VOCATIONALLY MATURE AND IMMATURE, AT A GIVEN POINT IN TIME, THAN DOES CLASSIFYING THEM ALL AS ONE OR THE OTHER ACCORDING TO THE BASE RATES, ASSUMING THAT THE LATTER DO NOT INVOLVE MARKEDLY DIVERGENT PROPORTIONS IN THE MATURE AND IMMATURE CATEGORIES.
	----WHICH ARE THE BEST GUIDANCE AND COUNSELING PROCEDURES TO FOLLOW IN ORDER TO ENHANCE THE VOCATIONAL DEVELOPMENT OF STUDENTS AT ALL EDUCATIONAL LEVELS, IN BOTH A PREVENTATIVE AND CURATIVE SENSE? ----HOW EFFECTIVE ARE OCCUPATIONAL ORIENTATION COURSES IN FACILITATING THE VOCATIONAL DEVELOPMENT OF STUDENTS THROUGHOUT THE EDUCATIONAL SYSTEM?	THE MAJOR HYPOTHESIS TO BE TESTED IS THAT VOCATIONAL GUIDANCE AND COUNSELING ARE EFFECTIVE IN FACILITATING THE VOCATIONAL DEVELOPMENT OF STUDENTS. A COROLLARY HYPOTHESIS IS THAT CERTAIN METHODS AND TECHNIQUES OF GUIDANCE AND COUNSELING ARE MORE EFFECTIVE THAN OTHERS. ALSO, THERE IS THE HYPOTHESIS THAT OCCUPATIONAL COURSES, EITHER SEPARATELY OR IN COMBINATION WITH GUIDANCE AND COUNSELING, CONTRIBUTE TO OPTIMAL VOCATIONAL DEVELOPMENT.

gathered "on the spot", as in opinion polls and large scale testing programs. Both the Career Pattern Study and Gribbons and Lohnes's project are instances of field research, as was the standardization of the Attitude Scale in VDP. Laboratory research is just the opposite, since subjects are removed from the field and placed in the often artificial, but highly controlled, conditions of the laboratory for data collection. An example would be the recording of latencies to competing and noncompeting vocational choice tasks as they are displayed to a subject by a shutter-box apparatus (Sharf, 1968). Finally, institutional research is carried on within an existing organizational framework, such as that of a school or a psychological service agency, and usually involves the evaluation of an on-going program of instruction or treatment. Thus, studies of the effects of occupational orientation classes and educational-vocational counseling would typically be made in the institutional setting.[7]

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[7] It should be noted that research might also be classified by criteria other than type and setting, such as experimental vs. correlational and cross-sectional vs. longitudinal, depending upon the purpose of the categorization.

Although each of the various types of research might be pursued in any of the settings, they usually are not, because of certain logical and temporal priorities which define stages in the research process. The first stage is typically comprised of survey and technique research, which is characteristically conducted in the field, since the identification and quantification of variables is necessary before they can be studied in relationship to other variables or used as evaluative criteria.

The second stage follows with studies designed to test hypotheses in the laboratory, where greater control over extraneous variables can be exerted and the stimulus conditions which affect the variables of interest can hopefully be isolated. The third stage applies and attempts to replicate, under conditions of less control, the results obtained in the laboratory. If they can be reproduced in the institutional setting, there is at least presumptive evidence that some degree of generality of results has been achieved and that certain courses of action, e.g., instructional or therapeutic, can be implemented with the expectation they will be efficacious. Obviously, the cross-classifications of type and setting of research in Figure 4 are not mutually exclusive, e.g., theoretical research can be conducted in the field or institution as well as in the laboratory, and consequently the stages which have been delieneated should be considered as modal rather than exclusive. If they are not followed, however, the results of research are not infrequently equivocal or uninterpretable. For example, survey research may be viewed _as if_ it were theoretical research, "yet insufficient technique research has been completed to measure the variables adequately and the same data are drawn upon to formulate _and_ test hypotheses" (Crites, 1969, p. 594).

Present Status of the Vocational Development Project

At present, studies with the Attitude Scale cut across the various stages of the VDP research program, but an increasing number are being focused upon problems in the second and third stages. Most of the survey and technique research on the Attitude Scale, which was initiated in the first stage of VDP, has been completed. Now interest is centering more and more upon testing hypotheses deduced from vocational development theory and assessing the effects of interventive educational and psychological experiences upon the maturity of vocational attitudes. The succeeding chapters summarize all of the research, classified as survey, technique, theoretical, and applied, which has been conducted by VDP and other investigators since 1965. Chapter 2 describes the methods and procedures which have been used for the analysis and collection of data; Chapter 3 reports the results which have been obtained; Chapter 4 discusses certain issues which have arisen from the findings; and, Chapter 5 provides a summary of what has been accomplished thus far.

CHAPTER 2

METHODS

Because of the scope of programmatic research, which encompasses a wide range of disparite problems, the methods of statistical analysis and procedures for data collection used in VDP have been numerous and diverse. Depending upon the type of research and the setting in which it has been conducted, different experimental designs and statistical techniques have been appropriate. Similarly, different data gathering processes have been employed by VDP and other investigators as indicated by the specific purpose of a study. This chapter provides an overview of what these methods and procedures are and is divided into two parts: (1) Statistical Analysis and (2) Data Collection.[1]

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[1] Detailed descriptions of the methods followed in specific studies are given in Chapter 3, in conjunction with the discussion of their results.

Statistical Analysis

The statistical techniques most frequently used in survey research are descriptive ones. Not only are the data yielded by this type of research often difficult to quantify for more sophisticated statistical treatment, because of the typically low level of measurement of survey devices, e.g., open-ended interviews, but the data are probably best expressed in terms of indices of central tendencies, dispersions, distribution characteristics, etc., for what are primarily normative purposes. Sometimes inferential statistics are applied in survey research, however, if there is some interest in the comparison of a sample characteristic with a population parameter or the difference between two (or more) groups. In VDP research as well as that by other investigators using the Attitude Scale, both kinds of statistics have been utilized to describe special groups of subjects, such as Appalachian disadvantaged, Negroes, American Indians, and Mexican-Americans; to establish trends in the maturity of vocational attitudes across grade levels; and, to compare groups of students choosing different high schoool curricula, e.g., college preparatory, commercial, general, and vocational. For compiling norms on the Attitude Scale, computer programs have been written which print out raw score distributions, percentile ranks, means, and standard deviations. They also draw histograms, with raw score intervals on the abcissa and percentage of sample on the ordinate, so that groups with varying Ns can be compared graphically to the same baseline. Examples of these norms can be found in Appendix B.

Technique research demands a greater variety of statistical techniques than survey research, including some which are idiosyncratic to the analysis of the psychometric characteristics of a paper-and-pencil measure like the Attitude Scale. Among these are the several kinds of item analysis procedures (Mehrens & Ebel, 1968) which are used to "purify" a scale and the various formulae available for determining the internal consistency of a test (Lord & Novick, 1968). In addition, certain other specialized procedures have been developed in VDP to study the internal structure of the Attitude Scale. Because T-F options yield two-point or dichotomous data, which sometimes have very small variances (greater than 80/20 response splits), thus distorting the inter-item phi coefficients, it has been necessary to devise other methods of analysis in order to make possible the factorial study of the Attitude Scale. Likewise, since acquiescence response style had not been adequately defined by operational procedures (Rorer, 1965), an experimental design for this purpose to analyze the possible effects of such bias upon the Attitude Scale had to be conceived. Standard statistical methods, such as analysis of variance and product-moment correlation, have also been relied upon, particularly in the studies of the Attitude Scale in relation to other vocational variables, e.g., choice consistency and realism.

As was mentioned previously, theoretical research is primarily concerned with testing hypotheses about the relationships which may exist among variables. Relationships can be analyzed by two basically different statistical methodologies: the between-groups and the within-groups types of analysis. The prototype of the former is when the investigator can constitute two groups, usually by some random assignment or matching procedure (Campbell, D.T. & Stanley, 1963), and compare them on a dependent variable after introducing a treatment into one but not the other. The prototype of the latter is when the investigator has only one group, obtains measurements of two (or more) variables on its subjects, and then correlates them. These are usually called the experimental and correlational models, respectively. They are not mutually exclusive. A point-biserial correlation might be calculated, for example, between the experimental/control group dichotomy and the dependent variable, assuming it is continuous. More commonly, group difference statistics, e.g., *t*s, CRs, and *F*s, are used to determine relationships among subject variables, where one or more of these is defined by grouped data. Thus, differences between socioeconomic levels in maturity of vocational attitudes might be studied by one-way analysis of variance. Strictly speaking, however, such a test is not legitimate, since an underlying assumption is that the groups be randomly constituted (Lindquist, 1953), and this is obviously not the case with socioeconomic level or any other unmanipulated, naturally-observed variable. Relationships established by analyses conducted in this way, therefore, should be interpreted only as correlational, not as functional.

In contrast to the other types of research, applied research involves a much greater utilization of experimental designs, as compared with correlational analyses, because the investigator is typically interested in the effects of some manipulated variable, such as counseling or occupational information courses or test interpretation, upon the maturity of vocational attitudes. The designs which have been used in VDP and other studies are the three "true experimental designs" discussed by Campbell, D.T. and Stanley (1963, pp. 13-16): the Pretest-Posttest Control Group Design, the Posttest-Only Control Group Design, and the Solomon Four-Group Design. These designs are presented schematically in Figure 5 and will be discussed in greater detail in the next chapter. One comment should be made here, however, concerning the analysis of data in the Pretest-Posttest design. Either a Type I or a "gains" analysis (Lindquist, 1953) is appropriate for this design and should yield the same results, if the random assignment of subjects to groups has made them equivalent. If it should happen that there are pretest differences between groups of some magnitude, then it is possible that the findings of the Type I and "gains" analyses might be different. In this case, the "gains" analysis is to be preferred, since it adjusts for individual differences on pretest and hence yields greater precision, i.e., less between-subject

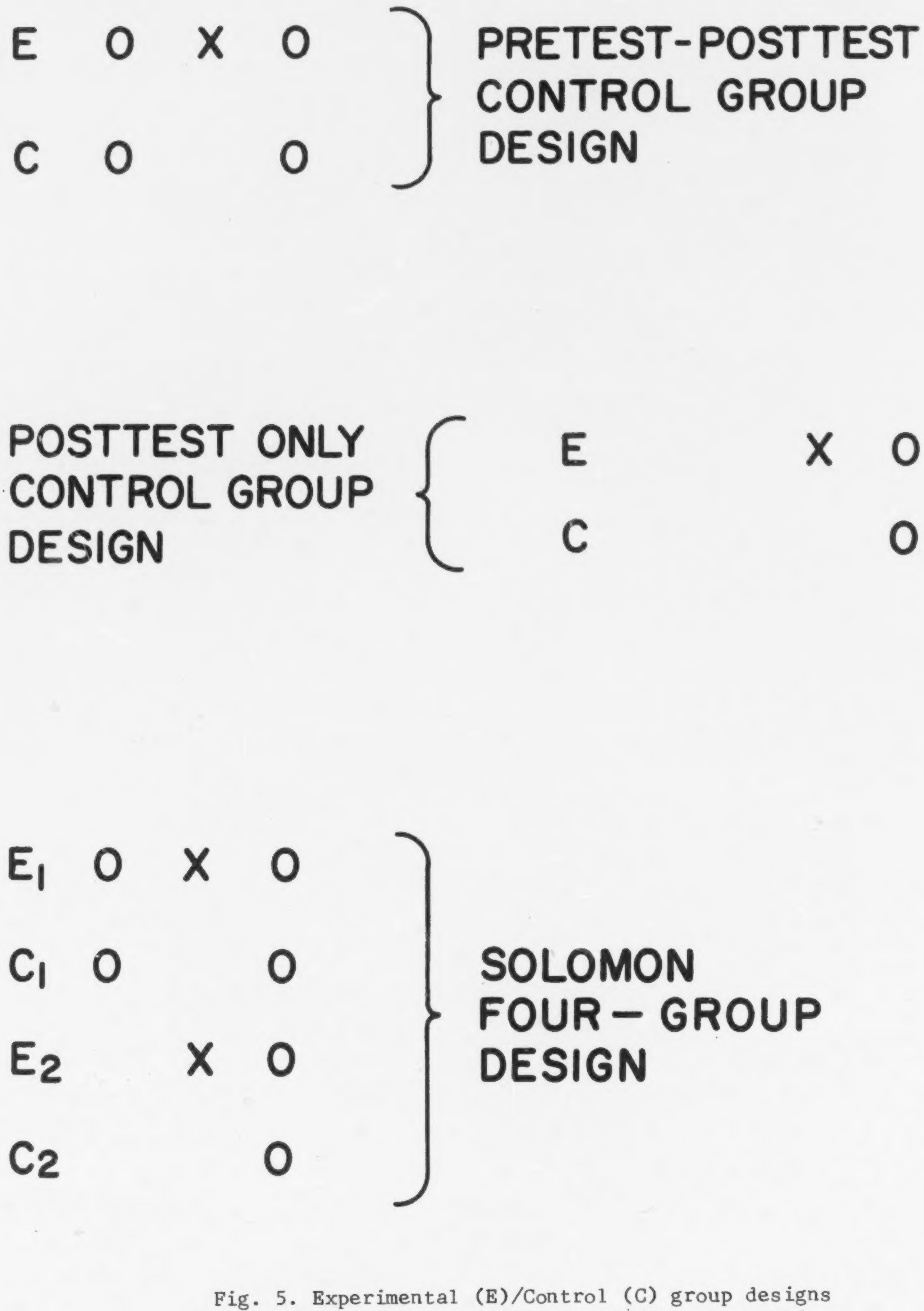
E O X O
C O O
PRETEST-POSTTEST CONTROL GROUP DESIGN
POSTTEST ONLY CONTROL GROUP DESIGN
E X O
C O
E1 O X O
C1 O O
E2 X O
C2 O
SOLOMON FOUR – GROUP DESIGN

Fig. 5. Experimental (E)/Control (C) group designs used in research on the Attitude Scale (0 = observations, X = treatment) (After Campbell, D.T. & Stanley, 1963, p.8).

variability in the within group error term.

In addition to the statistical methods which have been characteristically followed with each of the different types of research, other techniques have also been employed for supplementary analyses or for special kinds of data. Since they are probably most meaningfully discussed in terms of the results yielded by them, they are presented in Chapter 3.

Data Collection

Testing with the Attitude Scale was begun in November, 1961, in Cedar Rapids, Iowa, which at that time was a city of approximately 92,000 population, with a fairly diversified economy and representative social structure. Testing has continued each subsequent year, usually in the spring, until the final follow-up was completed in May, 1969. The sampling design for these repeated administrations of the Attitude Scale is outlined in Figure 1, where it can be seen that both cross-sectional and longitudinal data have been collected on subjects across the age and grade ranges shown. The *Ns* have varied from year to year, with the initial cross-sectional samples in grades 5 through 12 numbering 2822. The longitudinal or core samples vary in size from 500 to 1,000, depending upon how many grades they span. That is, a core sample which was originally constituted in the tenth grade would obviously have fewer subjects in it than one first tested in the fifth grade. The VDP results which are reported in the next chapter are based *only* upon the cross-sectional data, with the exception of reliability estimates for the Attitude Scale, since the longitudinal data have not as yet been processed. In addition to this long-term data collection program, some supplementary testings have been conducted for special purposes. One of these was to follow up subjects tested by Semler (1960) in 1957 to determine whether measures of achievement, adjustment, intelligence, personality, and socioeconomic status in the fifth grade would predict maturity of vocational attitudes and level of vocational choice in the twelfth grade (Crites & Semler, 1967). The other study (Nance, 1967) involved testing seventh through twelfth graders with a measure of ability to discriminate among occupations along several job factor dimensions and relating it to the Attitude Scale.

To collect data on college students, as well as those in elementary and secondary school, the Attitude Scale has been administered to 1,500 freshmen at the University of Iowa as part of the orientation program and to approximately 1,000 personal-adjustment and vocational-educational clients at the University Counseling Service. Not only was it considered essential to determine whether the Attitude Scale had enough "ceiling" for use with college students, since it was standardized on younger subjects, but it was of interest to establish whether there were differences among clients in the maturity of their vocational attitudes, both before and after counseling. The design for this study is described at length in Chapter 4. In addition, the Attitude Scale has been given as part of the post-experimental testing of Ss in two investigations, one on "The Effect of Bogus Test Report Manipulation Upon the Relationship between Self-esteem and Vocational Maturity" (Sievers, 1969) and the other on "Vocational Choice Status and the Susceptibility to Social Influence" (Schrader, 1969). Finally, it is being used as one of the dependent variables in an experiment on the operational definition and correlates of indecisiveness in vocational decision-making (Crites, 1969, pp. 599-604).

Data have also been collected with the Attitude Scale by other investigators. As diagrammed in Figure 6, the usual procedure is for these researchers to request information from VDP concerning the use of the Attitude Scale in studies they have planned. Copies of the scale (test booklets and answer sheets) are sent to the investigator for consideration in his research. VDP agrees to supply test materials and score answer sheets, if the investigator will deposit a duplicate deck of his data cards in the project Data Bank and make available a summary of the findings from his study for report on the Attitude Scale. The data in this bank are then processed through the VDP norm and histogram programs and compiled for general distribution to other investigators. In this way, a fund of findings on the Attitude Scale can be accumulated and disseminated as a baseline for further research and as a potential source of future studies on the maturity of vocational attitudes.

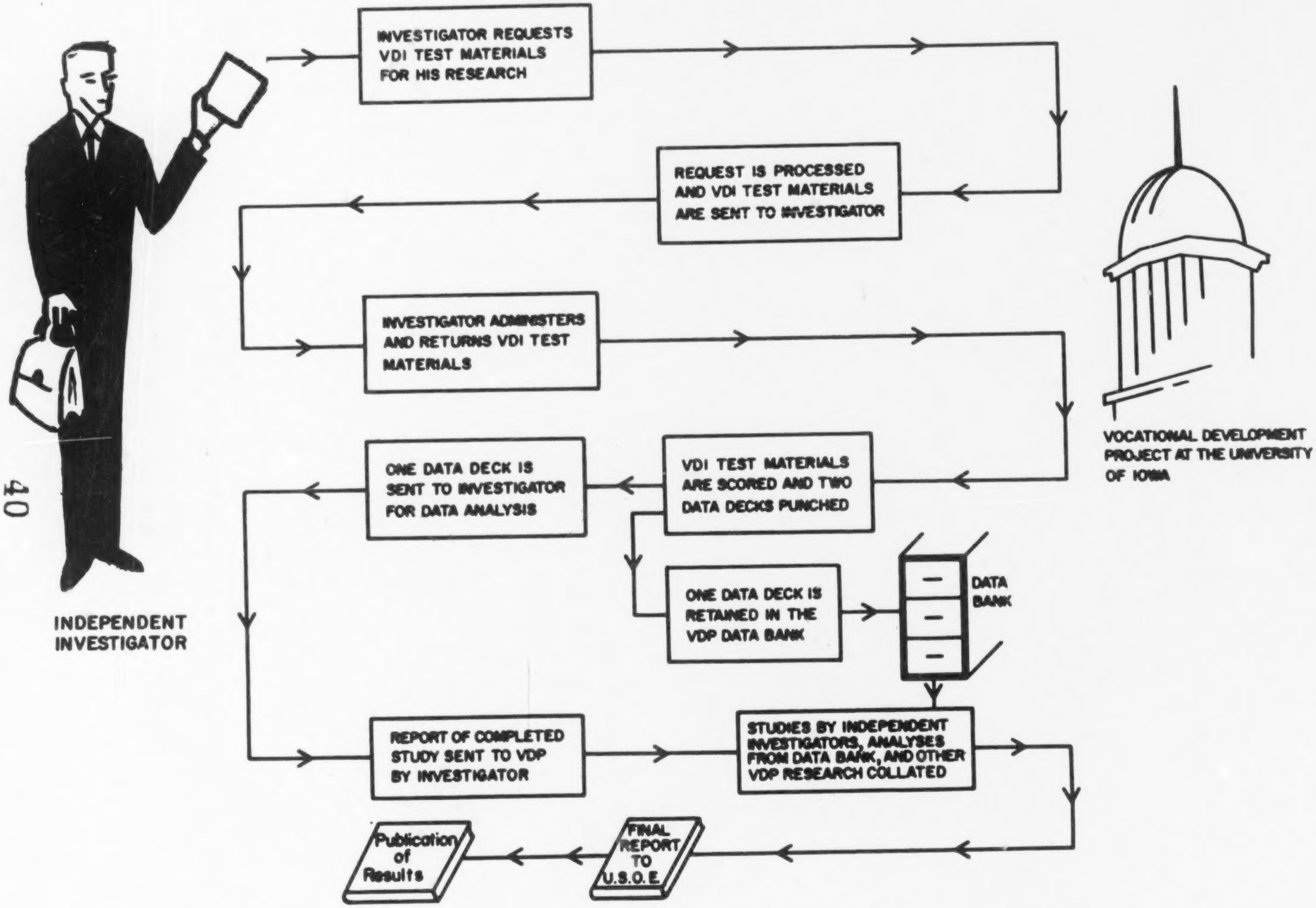
INDEPENDENT INVESTIGATOR
INVESTIGATOR REQUESTS VDI TEST MATERIALS FOR HIS RESEARCH
REQUEST IS PROCESSED AND VDI TEST MATERIALS ARE SENT TO INVESTIGATOR
INVESTIGATOR ADMINISTERS AND RETURNS VDI TEST MATERIALS
VDI TEST MATERIALS ARE SCORED AND TWO DATA DECKS PUNCHED
ONE DATA DECK IS SENT TO INVESTIGATOR FOR DATA ANALYSIS
ONE DATA DECK IS RETAINED IN THE VDP DATA BANK
DATA BANK
REPORT OF COMPLETED STUDY SENT TO VDP BY INVESTIGATOR
STUDIES BY INDEPENDENT INVESTIGATORS, ANALYSES FROM DATA BANK, AND OTHER VDP RESEARCH COLLATED
FINAL REPORT TO U.S.O.E.
Publication of Results
VOCATIONAL DEVELOPMENT PROJECT AT THE UNIVERSITY OF IOWA

Fig. 6. Flow chart for processing data collected on the Attitude Scale by other investigators.

CHAPTER 3

RESULTS

Approximately 100 studies of various aspects of the Attitude Scale have been undertaken since its initial standardization. About half of these are currently still in process; the results from the other half are reported in this Chapter.[1] They have been classified according to the several types of research discussed previously. Thus, the chapter is divided into the following sections: (1) survey research; (2) technique research; (3) theoretical research; and, (4) applied research.

Survey Research

The accumulated descriptive statistics on the Attitude Scale from the VDP Data Bank indicate two major findings on the normative characteristics of vocational attitudes during adolescence. First, the distributions of total vocational maturity (VM) scores vary considerably within grades from one sample to another, depending upon what the backgrounds and circumstances of the subjects were. These differences are apparent from the grade norms shown in Appendix B and the compositions of the groups tested. Equally clear from these data, however, is the fact that, although the score distributions of the upper high school grades and college levels are higher on the raw score scale, there does not appear to be a noticeable "ceiling effect". Evidently, the Attitude

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[1] Three studies (Das, 1962; Jessee, 1963; Perron & Rodrigue, 1969) were not included in this review, because they were conducted with Forms I or II of the Attitude Scale, before it had been standardized against age and/or grade norms.

Scale can be used with college students, as advanced as the senior year, even though the scoring key was derived from the responses of twelfth graders. Second, despite the differences among samples within grades, they all exhibit the same trend for total VM means to increase, usually significantly, from one grade to another. These data are summarized in Table 2; they corroborate the initial cross-sectional grade analyses of the Attitude Scale by VDP (Crites, 1965a). A one-year follow-up study of eleventh and twelfth graders by Drahozal (1965) also substantiates the standardization of the scale. For 901 male and female subjects in seven Iowa public high schools, he found that the overall VM mean increased from 36.88 in the junior year to 38.88 in the senior year, a difference of 2.00 raw score points, which was significant at the .01 level.

Curricular differences on the Attitude Scale within grade groupings have been investigated in several studies, and the results have consistently shown that they exist. In three studies of vocational and nonvocational high school students, it has been found that the former are less vocationally mature in their attitudes than the latter. Bathory (1967) compared 20 vocational education and 62 college preparatory majors, all males in the ninth grade, and obtained a difference between their Attitude Scale means of 4.23 (30.75 vs. 34.98), which was significant at the .01 level. A similar comparison of twelfth graders was nonsignificant, probably because of small _N_s (15 and 43, respectively), but the difference between the means was 3.04 in favor of the college-bound students. Preliminary findings from a large-scale study of 1285 eighth and 1293 ninth graders by Dutt (1968) also indicate this differential between vocational and nonvocational majors. Those in the technical

Table 2

Attitude Scale Means Across

Grades for Diverse Samples

	Grades					
Samples	7	8	9	10	11	12
Iowa	33.25	35.07	36.50	37.81	38.16	39.00
Texas	29.28	30.40	32.59	34.10	36.75	
Tennessee	30.13	33.20	32.97	34.63	35.54	37.04
Ohio	24.70	27.84	30.71			37.59
Pennsylvania		33.37	34.69		36.76	38.90
California		33.43	34.86	35.21	35.58	36.43
Oregon					36.29	37.54
Minnesota						37.61

	13	14	15	16
Iowa	39.77	40.05	40.52	41.46
Pennsylvania	38.86			
Tennessee	39.29			
Utah	39.29			
New York		39.33		

curriculum do not score as high on the Attitude Scale as do those in the academic curriculum. Holloway (1967) has reported the same difference for 119 Cooperative Vocational Education (CVE) students and 119 non-CVE students, each group equally divided by sex. The chi square test for groups vs. class intervals on the Attitude Scale yielded a $\underline{X}^2 = 13.45$, which was significant at the .005 level. The medians were 35.98 and 38.69, respectively, for the CVE and non-CVE majors. In a study of post-high school Specialty Oriented Students, Harlan (1964) found vocational attitude differences significant at the .05 level among business college, technical institute, and trade school majors, the means being 41.70, 38.80, and 38.18, respectively. Finally, although not a comparison of vocational and nonvocational students, a study of curricular differences between twelfth grade male seminarians ($\underline{N}=36$) and nonseminarians ($\underline{N}=45$) by Pable (1967) should be cited. The seminarians had a slightly higher mean on the Attitude Scale, but it was not statistically significant.

A considerable amount of survey research has been completed on the vocational attitude maturity of certain economic, ethnic, and racial groups. More specifically, studies of the Attitude Scale scores of the following groups have been made: (1) disadvantaged; (2) American Indians; (3) Mexican-Americans; and, (4) Negroes. Without exception, the means of these groups have been lower as compared with the norms for similar levels of educational attainment. These data are presented in Table 3. Both Asbury (1968b) and Myers (1966) found that disadvantaged youth from the Appalachian areas of Kentucky and Tennessee were, on the average, three to seven raw score points lower on the Attitude Scale, these differences being significant beyond the .01 level. Similarly, studies of American Indian children in North Dakota by Miller (1968),

Table 3

Comparison of Attitude Scale Means for Special Groups

by Grade with Iowa Norms

	Grade	Mean	Iowa
Disadvantaged			
Kentucky	8	28.90	35.97
Tennessee	10	34.06	37.81
	11	35.23	38.16
American Indians			
North Dakota	9	28.83	36.50
	11	33.20	38.16
Mexican-Americans			
New Mexico	9	30.23	36.50
Negroes			
Pennsylvania	9	32.39	36.50

McCrystal (1967), and Schmieding and Jensen (1968) have established that they are less vocationally mature in their attitudes than Caucasian comparison groups in the same grades. The Indian students averaged approximately six points lower on the Attitude Scale. Only one study has been reported on Mexican-American young people, but it is consistent with the other findings on these special groups. Wilstach (1967) compared the Attitude Scale scores of 104 male ninth graders in Albuquerque, New Mexico, with VDP norms and obtained a difference of 6.27, the respective means being 30.23 and 36.50. Testing samples of Negro high school students in Pennsylvania, Cooter (1966) has gathered data which indicate that racial background also influences vocational attitude maturity. As is apparent from Table 3, the mean of these subjects was considerably lower than the norms.

Comment These results from survey research with the Attitude Scale confirm its applicability across a wide range of educational, curricular, and demographic groups. It was standardized at the lower end of the adolescent developmental continuum on fifth and sixth graders, and its scoring key at the upper end was derived from the majority responses of twelfth graders, but it appears to have sufficient "ceiling" to discriminate among individuals as advanced as the senior year of college. The reason it can be used with the latter is partly psychological and partly psychometric. Some college seniors are less vocationally mature than would be expected on the basis of their educational level and consequently obtain lower Attitude Scale scores than their peers. Likewise, not all of the twelfth graders in the scoring key criterion group made the majority response to all items in the scale, the mean VM score being 39.00 out of a total possible 50 items, and hence a raw score range of approximately

10 points remained as ceiling for older individuals. Within grades, students in academic curricula as contrasted with vocational technical education tend to be more vocationally mature, a finding which Gribbons and Lohnes (1968) have also reported for the RVP scales. As will be brought out in the section on theoretical research, and as was found with RVP, vocational maturity is moderately positively (.30-35) correlated with intelligence. Therefore, some of the differentiation between curricular groups may be attributable to differences in their intelligence, those in the college preparatory majors usually being brighter. For the same reason, students from disadvantaged, ethnic, and racial groups may be less vocationally mature. This does not mean, however, that the Attitude Scale cannot be used with them, but only that they are likely to score lower on it than their more favored or gifted peers.

Technique Research

Studies of the psychometric characteristics of the Attitude Scale can broadly be classified into two categories: (1) those which have investigated the internal structure of the inventory, i.e., item analysis, response bias, reliability, and scoring,[1] and (2) those which have related it to external variables, such as vocational aspiration, vocational choice, and other measures of vocational maturity. Considering the research on the internal structure of the scale first, the results of a comprehensive item analysis, based upon 1254 Ss (approximately equal numbers of males and females) in grades 7 through 11, has yielded the data presented in Table 4. The biserial $\underline{r}$s for the items in Table 4 were computed from the upper and lower 27 per cent of the total score distribution, using Flanagan's (1939) procedure and nomograph. These correlations express the magnitude of the relationship of each item to the total scale and can be interpreted as estimates of the first factor loadings on the centroid of the inter-item matrix (Richardson, 1936). It is apparent from the signs of the coefficients that, as was expected theoretically, the items do not constitute a homogeneous scale, or, stated conversely, the scale appears to be factorially complex. The reason for this item heterogeneity is that they were written to define five different clusters of vocational attitudes (see Chapter 1) rather than one unitary variable. This is also why the Kuder-Richardson Formula 20 coefficients in Table 5 are lower than those usually found in aptitude tests, but they are of much the same order as those reported for personality scales (Super & Crites, 1962, p. 544).

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[1] Factor analyses of the Attitude Scale, one by Asbury and another in VDP, are currently under way, but their results are not yet available to report.

Several studies of the possible effects of response bias in the Attitude Scale have been completed, and, although some of them have produced results of borderline significance, they have generally indicated negligible variance in VM scores attributable to this source of error. Following Rorer (1965), these studies can be classified according to the type of bias they investigated: response set or response style. Two studies of set have been reported, one correlational and one experimental. Carek (1965) correlated the Marlowe-Crowne (1960) Social Desirability Scale with the Attitude Scale, vocational choice decision, and vocational choice realism in a group of 346 male college students and obtained an $\underline{r} = .15$ ($\underline{p} < .01$) between the two scales. When this common variance was

Table 4

Biserial Correlation Coefficients for Attitude Scale Items in Grades Seven through Eleven

(N = 1254)

	Grade				
Item	7	8	9	10	11
1	.22	.43	.36	.35	.45
2	-.27	-.42	-.35	-.36	-.38
3	.35	.41	.49	.34	.37
4	-.19	-.30	-.13	.07	-.14
5	.45	.43	.37	.19	.38
6	.53	.52	.46	.42	.38
7	.39	.49	.27	.54	.29
8	.49	.54	.34	.39	-.07
9	.32	.19	.21	.40	.41
10	-.17	.17	-.07	.00	.26
11	-.30	-.10	-.11	.21	-.15
12	.49	.33	.43	.48	.43
13	.25	.23	.38	.28	.25
14	.46	.47	.48	.39	.34
15	.22	.36	.44	.36	.22
16	.06	.02	.10	-.13	.15
17	.60	.49	.35	.52	.29
18	.48	.51	.21	.40	.47
19	.12	.05	.31	.28	.22
20	-.18	-.13	-.11	-.27	-.43
21	.30	.28	.38	.46	.57

	Grade				
Item	7	8	9	10	11
22	.33	.02	.23	-.17	.43
23	-.28	-.27	-.21	-.20	-.38
24	-.21	-.31	-.17	.20	-.33
25	.55	.43	.49	.52	.51
26	.47	.60	.67	.67	.33
27	.48	.42	.35	.42	.30
28	-.11	.05	.09	-.25	.33
29	.47	.40	.40	.30	.45
30	.38	.40	.26	.38	.22
31	-.30	-.28	-.27	-.26	-.25
32	-.29	-.27	-.30	-.27	-.48
33	.20	.28	.26	.46	.23
34	.00	.21	.02	.07	.20
35	.51	.35	.44	.48	.38
36	.32	.52	.39	.28	.18
37	.10	.31	.37	.27	.39
38	-.38	-.32	-.28	-.42	-.40
39	.46	.43	.37	.50	.34
40	.43	.43	.40	.48	.45
41	.52	.66	.62	.54	.45
42	-.54	-.49	-.53	-.43	-.48
43	.17	.18	.27	.05	.25
44	.54	.36	.37	.27	.42
45	-.32	-.39	-.44	-.52	-.50
46	-.33	-.49	-.38	-.63	-.34

Item	Grade 7	8	9	10	11
47	-.60	-.45	-.41	-.60	-.36
48	.30	.33	.35	.34	.32
49	.52	.33	.30	.23	.18
50	.27	.28	.53	.24	.07

Table 5

Summary Statistics for Item Analysis

of the Attitude Scale

	Grades				
Statistics	7	8	9	10	11
N	300	274	281	272	127
Mean	34.47	36.15	37.36	38.38	38.63
Variance	30.90	25.45	21.72	22.99	16.12
S.D.	5.56	5.05	4.66	4.79	4.02
K-R 20	.75	.72	.68	.72	.60
S.E.M.	2.78	2.60	2.55	2.44	2.47
rbis	.69	.72	.75	.77	.77

partialled out of the relationships of the Attitude Scale to choice decision and realism, however, they were unchanged. In other words, despite the low positive correlation of social desirability with VM scores, it does not affect their associations with other variables. Using an experimental paradigm, rather than a response measure, to define set, Sharf (1968) assessed the effects of "fake good" instructions upon the Attitude Scale. He tested and retested three groups of male college students with all possible combinations of standard and fake instructions (except fake-fake) on the two occasions: Group A (_N_=30), standard--fake; Group B (_N_=26), fake--standard; and, Group C (_N_=26), standard--standard.[2]

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[2] The dissimulation instructions were as follows: "When you take this test, imagine that you are applying for a job you like very much. You want to impress your prospective employer with the fact that you have made an intelligent and mature job choice" (Sharf, 1968, p.2).

Correlated _ts_ for differences between the test and retest means within groups were significant at only the .05 level in A and B, indicating a slight effect of the instructions upon the Attitude Scale. This conclusion is equivocated, however, by the between groups "gains" analysis, which revealed no significant difference between Groups A and C (the control) but a .01 difference between Groups B and C. What this means is that only when fake instructions _precede_ the standard administration do they have a significant effect upon the Attitude Scale.

Two studies have also been conducted on response _style_ in the Attitude Scale, again one being correlational and the other experimental. Shirts (1968, p. 44) devised a "reversed" form of the Attitude Scale based upon the responses of a normative group which answered "...two items of approximately reversed content as though they were indeed adequately reversed." He used this methodology to meet Rorer's (1965) criticism that not all items can be logically reversed, e.g., "Work is pleasure" is not necessarily the contradictory of "Work is drudgery", since some Ss may see it as both and hence consistently endorse the two statements in the same way. Shirts reasoned further that, if response style is operative in the Attitude Scale, then the correlation between the standard and reversed forms should be significantly less than the maximum possible r set by the reliabilities of the two scales. Administering the different forms in counterbalanced order to groups of fifth (N=179), sixth (N=180), and twelfth (N=139) graders, he found that there were no significant differences between rs for the forms and the product of their reliabilities at the sixth and twelfth grade levels, but that there was in the fifth grade (signigicance level not reported). Further analyses of item responses to determine their logical consistency from one form to the other yielded largely negative findings, with the exception of one borderline significant difference ($p < .05$), again in the fifth grade, which indicated that Ss at this level tended to be less consistent in their responses from test to retest when given the standard and reversed forms than when taking the latter on both occasions. In all, then, Shirts' results suggested the possibility of response style (given his definition) for fifth graders but not for sixth and twelfth graders.

Throughout the research on response style, a recurring problem has been the definition of this variable unconfounded with response to item content (Rorer, 1965). Shirts' concept of "normative" item reversal may provide a solution, but he was able to identify only 10 items from the

Attitude Scale which met his criterion. A different approach has been taken in VDP, using an experimental paradigm developed from a procedure originally conceived by Polder (1962). Two independent groups of college Ss (30 males, 30 females in each) were randomly constituted and administered the Attitude Scale on test and retest (10 minute interval) with two different response formats, the design being as shown in Figure 7. The hypothesis was that, if response style was influencing item endorsement in the Attitude Scale, then there should be a disproportionate number of ? responses on test which change to T responses on retest when compared with the number of ?'s which change to F's (Group I). The rationale for this expectation was that, when S are in doubt about how to endorse an item, they will acquiese and answer it "True" (Cronbach, 1942). In fact, the opposite occurred: the number of ?'s shifting to F's was greater than the number becoming T's ($X^2 = 24.43$; $p < .01$). It might be argued that this result nevertheless reflects a response style were it not that it is confounded with the possible effects of retesting. That is, ?'s may change disproportionately to F's even when the ? response option is provided on retest, as in Group II, simply because Ss are administered the scale twice. To evaluate this possibility, the ratio of F to total responses (T + F) on retest in Group I was compared to the ratio of F to total responses (T + F + ?) on retest in Group II, the expectation being that, if there were response style present in answering False, then the ratio in Group I should be significantly greater than the ratio in Group II. The respective percentages were 65 and 62, however, and were not significantly different. It can be concluded, therefore, that in this study there was neither evidence for a "yeasaying" nor a "naysaying" response style in the Attitude Scale.

56 VDI

	GROUP	
	I	II
TEST	T F ?	T F ?
RETEST	T F	T F ?
N	60	60

Fig. 7. Experimental design for studying acquiescence in the Attitude Scale.

Finally, a line of research in VDP which is somewhat related to that on response bias, but also distinct from it, has dealt with the construction of the so-called D Scale (see Chapter 1). This scale is comprised of items which were unrelated to age or grade and which were answered in either the True or False response position by 20% or less of the standardization samples. In other words, it was thought that this scale might measure "deviant" response tendencies (Berg, 1959) and possibly vocational maladjustment. Consequently, some further work was done on it, but the results have been inconclusive as yet. Hollender and Schalon (1965) correlated the D Scale with the MMPI in a sample of 112 male and female clients from a university counseling service and obtained the following rs, all of which are significant at the .05 level: Hysteria, .20; Paranoia, .22; and, Schizophrenia, .23. These are low positive relationships of borderline significance, which need to be replicated before much can be made of them. About all that can be concluded is that they suggest a possible association between deviant responding and poorer adjustment. To analyze this relationship further, a second study (Crites & Semler, 1967) was conducted in which the D Scale was related to counselor and teacher ratings of adjustment on the SRA Rating Scale for Pupil Adjustment for 180 male, 166 female high school seniors.[3] None of the F tests comparing groups with high, average, and low D Scale scores on the adjustment ratings was significant, however, and it was concluded that "...this scale is not a meaningful measure of vocational adjustment"

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[3] For a fuller description of this study, see the section on "Theoretical Research".

(Crites & Semler, 1967, p. 494). In retrospect, this conclusion may have been premature and overly pessimistic, since only two studies on the D Scale have been completed. It might be related, for example, to other measures of deviant response, such as Berg's (1959) Perceptual Reaction Test.

The *reliability* of the Attitude Scale has been appraised in two ways: (1) by computing internal consistency estimates and (2) by determining test-retest stability coefficients.[4] The results for the former are given in Table 6 for grades 6 through 12 tested in 1962. It is apparent from these data that most of the internal consistency estimates are in the .70s, the average coefficient being .74. As was pointed out in the discussion of the item analysis of the Attitude Scale, it would not be expected theoretically to be highly homogeneous, because it was constructed to be a composite of several clusters of vocational attitudes. Thus, it was not unanticipated to obtain the estimates listed in Table 6. In general, they are consistent with the substantive complexity of the scale. Similarly, it would not be expected that the Attitude Scale would have a very high test-retest stability coefficient--at least not as high as the .85 minimum usually considered essential for aptitude tests (Super & Crites, 1962). Rather, it would more likely be in the .70s, since the

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[4] Equivalent forms of the Attitude Scale have not been constructed, because there are no practice effects to control and no security to maintain as in achievement and aptitude testing. Moreover, the interest in retesting with the scale is to determine whether developmental changes have taken place in the *same* attitudes from one occasion to another.

Table 6

Internal Consistency Coefficients for the Attitude Scale in Grades Six through Twelve

Grade	N	r_{tt}
6	255	.84
7	1328	.70
8	1307	.68
9	1349	.65
10	1313	.72
11	1059	.77
12	781	.75
		Mean = .74

Attitude Scale is presumably a measure of a developmental variable, which not only changes over time but which changes at different rates for different individuals (Jersild, 1946). Thus, the rank orderings of Ss on two testing occasions, with sufficient time between them for development to occur, would be somewhat less highly correlated than those for a nondevelopmental behavior or status characteristic. Such was the finding for 1648 VDP Ss tested and re-tested over a one-year interval: the stability coefficient was .71 and the standard error of measurement was 3.12. How much of the unpredicted variance, approximately 50%, is attributable to error, however, and how much is due to maturation cannot be determined from traditional procedures for estimating reliability. What is needed is a study in which these two sources of variance can be operationally defined and separately estimated.

One last study on the internal structure of the Attitude Scale, which concerns its "content" validity, should be mentioned. Hall (1962) instructed 10 expert judges (5 male, 5 female counseling psychologists) to answer each of the items in the scale in what they considered to be the vocationally mature response position. His criterion of interjudge agreement was 8 out of 10 or 80%. The judges' responses were then compared with the empirically derived scale based upon the majority responses of the twelfth graders in the standardization sample. Of the 50 items in the Attitude Scale, the judges agreed with the scoring key 37 times, including all of the seven items which are scored as True. In other words, there was 74% agreement between the judges and the empirically keyed items. It is interesting to note the content of items on which the judges disagreed: it seems to reflect their idiosyncratic concerns and values as counseling psychologists. For example, they answered the following items True whereas they were keyed False: "If I can just help others in my work, I'll by happy", "Choose an occupation which gives you a chance to help others", and "I want to really accomplish something in my work--to make a great discovery or earn lots of money or help a great number of people." In addition to their social service values manifested in these statements, they also revealed their vocational indecisiveness, not an uncommon reason for entering the field of counseling: "I don't know what courses I should take in school", "I can't understand how some people can be so set about what they want to do", and "I keep changing my occupational choice." The judges endorsed True as the vocationally mature response to these items, whereas empirically they are scored False. These exceptions should not obscure the main finding, however, which was that the judges agreed with the scoring key 3 times out of 4. Thus, the Attitude Scale would appear to have acceptable "content" validity as defined by this methodology.

Much the same conclusion can be drawn about its "criterion-related" validity,[5] as evidenced by its relationship to three different external fully developed in this monograph, suffice it to say that the results on the relationships of the Attitude Scale to other variables can be interpreted as evidence for its validity or not, depending upon one's point-of-view. In either case, the results are the same.

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[5] The concept of "validity" is an ambiguous one which has provoked considerable discussion and debate. It is used here more in consideration of those who are familiar with it than because of its logic. It can be argued, as has been done in a forthcoming Manual for the Attitude Scale, that only the concept of "content" validity applies to it. Its relationships to empirically-defined variables are neither instances of its validity nor invalidity, although they are support for its significance or usefulness as a psychological concept (Bechtoldt, 1959; Bergmann, 1957; Brodbeck, 1957). Since this line of reasoning cannot be

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variables: vocational aspiration, vocational choice, and vocational maturity. Using the Miller-Haller (1963) Occupational Aspiration Scale as a measure of realism of aspiration, Bathory (1967) correlated it with the Attitude Scale at the ninth ($N = 79$) and twelfth ($N = 58$) grade levels. He obtained *r*s of .39 ($p < .01$) and .31 (n.s.), respectively, the latter failing to reach significance due to the small sample. In a comprehensive study of VM scores in relation to vocational choice consistency, decision, and realism, Hollender (1964) found relationships among each of these "criterion" variables and maturity of vocational attitudes in a sample of 1648 *S*s in grades 6 through 12, stratified by quartiles on scholastic aptitude. The results of *t* tests between high and low groups indicated that those students who were consistent in their choices from one year to the next, who had made choices, and who were realistic in their choices generally had significantly higher mean scores on the Attitude Scale, regardless of aptitude level. Likewise, Carek (1965) has reported a biserial *r* of .25 between VM scores and choice decision in a sample of 346 male college students, which was significant at the .01 level. Finally, some preliminary data have been gathered on the relationship of the Attitude Scale to other measures of vocational maturity. In a small sample ($N = 50$) of Negro ninth graders, Cooter (1966) calculated an *r* of .38 ($p < .01$) between VM and Gribbons and Lohnes RVP. Wilstach (1967) was unable to find a significant correlation between the Attitude

Scale and Super's IVM, however, the r being .001 in a group of 104 Mexican-American ninth grade males. Needless to say, further study of these relationships is indicated, but those with the vocational aspiration and choice variables, particularly the latter, appear to be reliable and systematic.

Comment. Several inferences can be drawn from the technique research which has been conducted on the Attitude Scale. First, item analyses and internal consistency estimates indicate that in accordance with its construction as a composite measure of several vocational attitude variables, it is not a homogeneous scale and probably is factorially complex, although results from factor analyses currently in progress are not yet available. Second, its test-retest stability over a period of one year is about what would be expected theoretically for measures of developmental variables, being .71 with a standard error of measurement of 3.12. Third, the findings on response bias in the Attitude Scale have been largely negative. It bears a low positive relationship to social desirability, but this common variance apparently does not influence its correlations with other variables. And, it does not seem to be affected by response style or acquiescence response tendencies, except possibly in young children (fifth graders). Finally, evidence for its "content" validity comes from the 74% agreement between judges responses to the scale and the scoring key, and support for its "criterion-related" validity is found in its relationships to vocational aspiration, vocational choice consistency, decision, and realism, and possibly to vocational maturity as assessed by the Readiness for Vocational Planning (RVP) Scales.

Theoretical Research

If vocational development is conceptualized as a process which is affected by the antecedent conditions of an adolescent's experience (Roe, 1957; Super & Bachrach, 1957), then the background or stimulus variables which are related to the maturity of vocational attitudes are of particular theoretical interest. What these factors may be has been the problem of several studies with the Attitude Scale. In groups of high school (N = 162) and college (N = 306) students, Cover (1968) and Harris (1966) have reported nonsignificant rs of -.13 and -.02, respectively, between VM scores and socioeconomic status, where the latter was measured by a scaling of father's occupation and/or father's educational level and source of family income. In contrast, Miller (1968) found a significant r of .39 in his group of integrated Indian youth (N = 102), but not for the non-integrated (r = .10; N = 107). His index of socioeconomic status, however, was whether the principal breadwinner was (1) fully employed, (2) partially employed, or (3) employed, rather than occupational level. Miller also obtained significant rs of .27 and .39 for the integrated students between father's and mother's amount of education; only the latter was related (r = .32) to vocational attitudes in the non-integrated group. For 63 eighth grade disadvantaged boys from the Appalachian region, Asbury (1968) correlated the Attitude Scale with number of siblings, the gamma r of -.23 being nonsignificant. Similarly, Cover (1968) was unable to demonstrate a systematic relationship between previous work experience and attitude maturity: the r was only -.07. Thus, the evidence on socioeconomic status, number of siblings, and previous work experience in relation to the Attitude Scale is largely negative, although there is some indication from one study that parental educational level may be a background correlate of the maturity of vocational attitudes.

Because most theories of vocational development posit response-

response (R-R) relationships between vocational behavior and other variables (Crites, 1969), a large number of studies with the Attitude Scale have been conducted to determine its correlation with measures of *psychological variables*. These can broadly be classified as of two types: intellective and nonintellective. Research on the former has dealt almost exclusively with the relationships of intelligence or scholastic aptitude tests to the maturity of vocational attitudes. As might be expected theoretically (Super & Overstreet, 1960; Gribbons & Lohnes, 1968), the correlations have ranged from the upper .20s to the lower .40s, with a central tendency in the mid--.30s. For a sample of 63 eighth grade disadvantaged males, Asbury (1968) obtained an r of .28 between the Attitude Scale and the Otis Quick Scoring. Also using the Otis, but with ninth grade boys (N = 257), Dutt (1968) has reported an r of .42. In a group of high school senior males (N = 162), Cover (1958) found an r of .45 with the SCAT; similarly, in another sample of twelfth graders (N = 1,116), Tamminen and Miller (1968) calculated an r of .40 with the MSAT. Correlations of the Attitude Scale with the Dailey Vocational Guidance Tests in 15 Specialty Oriented Schools (Hoyt, 1962) varied from .25 to .53, with a mean r of .37. In groups of college students, which are more homogeneous in ability, the rs have generally been lower. Carek (1965) found an r of only .17 ($p < .01$) with the ACT composite for 346 male college students; this compares closely with the r of .20 ($p < .01$) which Williams, R.H. (1967) obtained with the SAT-Verbal in a sample of 215 male sophomores. These findings agree with those of Super and Overstreet (1960) on the Indices of Vocational Maturity, which correlated .29 with intelligence in the ninth grade, and Gribbons and Lohnes (1968) on the Readiness for Vocational Planning scales, which had multiple Rs with the Otis of .57 in the eighth grade and .23 in the tenth grade. In short, it is well-established that, although vocational maturity is related to variables that are nonintellective (see following discussion), it is also significantly associated with intellective ones. Further substantiation for this conclusion has been provided by Nance (1967), who devised a measure of the ability to discriminate among the characteristics of occupations and correlated it with the Attitude Scale in grades 7 through 12 ($\underline{N}$ = 374). In the junior high school grades, where his samples were larger and more representative, he found $\underline{r}$s of .39, .52, and .34 ($\underline{p}$ <.01), but not in the upper grades, where restricted ranges produced $\underline{r}$s of -.02, .13, and -.13 (n.s.).

The nonintellective variables which have been related to the Attitude Scale have been primarily aspects of personality, but there is also one study which has been completed on interest stability in relation to vocational attitude maturity. Three investigations using the Adjective Check List (ACL) (Gough & Heilbrun, 1965) as a measure of personality characteristics have been conducted, and all have yielded positive findings. Bartlett (1968) compared 69 male and 81 female Manpower Development trainees, ages 16 through 21, with High (>39), Middle (30-40), and Low (<30) VM scores on the various ACL scales. His analysis of variance indicated a positive relationship between the maturity of vocational attitudes and Self-confidence, Achievement, Autonomy, and Dominance, and an inverse relationship with Deference and Abasement. He concluded that high scorers on the Attitude Scale are "...more assertive, persistent, goal oriented, forceful, and independent" (Bartlett, 1968, p. 107). These findings have been generally corroborated by Hollender and Schalon (1965), who correlated VM scores with the MMPI as well as the ACL in a sample of 112 male and female clients from a university counseling service. The significant rs with the ACL were for the following scales: Achievement (.21), Endurance (.26), Order (.21), Intraception (.32), and Aggression (-20). With the MMPI, they were: Depression (-.30), Psychopathic Deviate (-.22), Psychasthenia (-.27), and number of T-scores above 70 (-.27). In other words, those clients who were more vocationally mature in their attitudes were also more task-oriented (Heilbrun, 1960) and better adjusted (lower scores on the clinical scales of the MMPI). In the other study with the ACL, Schalon (1965) correlated the Attitude Scale with just the Achievement and Aggression scales in a sample of 102 vocational-educational clients (all males) and found an r of .31 with the former, which was significant at the .01 level, but a nonsignificant r of -.17 with the latter. Finally, the one investigation which has been done on interests by Joselyn (1963) was designed to test whether SVIB profile stability is related to maturity of vocational attitudes. In a comparison of high (32 males, 32 females) and low (32 males, 32 females) profile stability groups, with a 4 to 5 month test-retest interval, he found no differences in VM means. He did not report the correlation of the Attitude Scale with SVIB Interest Maturity, although presumably the data were available and would be theoretically relevant.

A third class of theoretical variables, in addition to background and psychological variables, is what might be called adjustment or outcome variables. Super (1957, pp. 186-187) defines these behaviors as follows: "Vocational adjustment may be defined as the outcome of the handling of the vocational development problems encountered by the individual... It is the result of interaction between the individual's personal resources including his vocational maturity -- what he brings to his encounters with reality -- on the one hand, and reality demands on the other." Such outcomes, which theoretically should be related to vocational maturity, include scholastic achievement, persistence in college, success in vocational training, and job success. In varying degrees, each of these variables has been found to be related to the Attitude Scale. In the study by Asbury (1968) mentioned previously, he found an $\underline{r}$ of .34 ($\underline{p} < .01$) between VM scores and the Stanford Achievement Test. Three correlations with grade-point-average at different levels of the educational structure have been reported, all of which were significant at the .01 level: .42 for 162 male high school seniors (Cover, 1968); .22 for 306 male college freshmen (Harris, 1966); and, .19 for 215 male college sophomores (Williams, R.H., 1967). As is apparent from the magnitude of these coefficients, they are smaller further up the educational ladder, since the more advanced students are more homogeneous in both achievement and attitudes, and consequently restriction in range on these variables attenuates the correlations between them. A somewhat different, but related, index of achievement is persistence in college, which Harris (1966) has also established is associated with vocational attitude maturity. To compare 306 persistors and 79 nonpersistors, defined as drop-outs before the end of two semesters, he ran a Mann-Whitney $\underline{U}$ test which indicated that the persistors were significantly ($\underline{p} < .01$) more vocationally mature. In a study of success in vocational training, Malone (1965) correlated VM scores with instructors' ratings of work study-performance in four curricula: practical nursing, electronics technology, mechanical technology, and data processing. The $\underline{r}$s for nursing (.30; $\underline{p} < .01$) and mechanics (.16; $\underline{p} < .05$) were relatively low but significant. The one study of job success which has been completed thus far was a follow-up of 508 male and female Specialty Oriented

Students at one-year and five-year intervals by Cox (1968). His criterion of job success was comprised of five components: (1) extent to which the job was related to previous training; (2) job satisfaction; (3) a worker's certainty that his job was best for him; (4) job earnings; and, (5) job stability. The Attitude Scale was correlated .19 ($\underline{p} < .05$) with the composite criterion for 131 female business school students, and was associated with job certainty (eta = .14; $\underline{p} < .05$) for all students. It was also related to job stability (eta = .19; $\underline{p} < .01$) for 281 male trade-technical students.

That both psychological and outcome variables are related to the maturity of vocational attitudes in adolescence has been fairly well-established by the research reviewed above. Why these relationships obtain, however, has not been as extensively investigated, although one study has been reported which bears upon this theoretical question. In 1957, Semler (1960) tested 247 male and 236 female fifth graders in the Cedar Rapids school system with a variety of measures of achievement, adjustment, intelligence, personality, and socioeconomic status. In 1963-64, Crites and Semler (1967) followed up this group as part of VDP with the Attitude Scale, counselor and teacher ratings of adjustment, and Iowa Test of Educational Development scores from cumulative records. At the time of the follow-up, the students were in the twelfth grade, and it was possible to include 72 per cent of the original sample, 180 males and 166 girls, in the later data collection. The analyses were both cross-sectional and longitudinal, the focus being upon the relationships of adjustment and achievement to vocational maturity. The main results are summarized in Table 7, where two principal findings can be noted: first, both educational achievement (ITED) and vocational maturity (VDI) are

Table 7

Correlations among Achievement, Adjustment, Intelligence, Personality, Socioeconomic, and Vocational Variables for 1957-1963, 1957-1964, and 1963-1964

Year	1963					1964	
	SRA_c	SRA_t	VDI	LVC	ITED	VDI	LVC
1957							
SRA_t	.34**	.20**	.06	.00	.31**	.13*	.01
OSA_p	.44**	.27**	.05	.10	.28**	.09	.11
CTP-P	.28**	.18**	.11	-.03	.38**	.22**	.03
CTP-S	.27**	.24**	.21**	-.01	.31**	.23**	.05
Otis	.29**	.16**	.10	.01	.55**	.16**	.01
ISC	.21**	.12*	.18**	-.06	.31**	.14*	.04
1963							
SRA_c		.51**	.22**	-.03	.44**	.24**	.00
SRA_t			.24**	-.03	.34**	.16**	.01
VDI				.16**	.17**	.61**	.14*
LVC					.18**	.07	.53**
ITED						.24**	-.08
M	13.61	13.99	39.59	1.67	61.73	40.17	1.67
SD	3.09	2.85	4.63	1.51	29.48	4.09	1.51

Table 7 (Cont'd)

Note.-Abbreviated: SRA_t = SRA pupil adjustment rating by teachers; OSA_p = Ohio Social Acceptance Scale, peer acceptance; CTP-P = California Test of Personality, personal adjustment; CTP-S = California Test of Personality, social adjustment; Otis = Otis Quick-Scoring Mental Ability Tests; ISC = Warner's Index of Status Characteristics; SRA_c = SRA pupil adjustment rating by counselors; VDI = Vocational Development Inventory, Attitude scale; LVD = Level of Vocational Choice; ITED = Iowa Tests of Educational Development. N = 239.

*$p < .05$.

**$p < .01$.

related to earlier and later adjustment status; and, second, educational achievement and vocational maturity are related to each other. This latter relationship disappeared, however, when common adjustment variance was partialled out. In other words, adjustment was apparently producing the correlation between educational achievement and vocational maturity and could be considered as a more general dimension of development embracing these two more specific aspects. Depicted graphically, this construct would be as shown in Figure 8. Crites and Semler (1967, p. 495) describe it as follows:

> "Adjustment appears to be a suprafactor on which both educational achievement and vocational maturity have 'loadings', the relationship between them being a function of this communality. The better adjusted adolescent, as perceived by his counselors and teachers, is more educationally advanced as well as more vocationally mature."

Theoretically, then, the relationship between educational achievement and maturity of vocational attitudes might be accounted for by their covariation with adjustment.

Some substantiation for this interpretation comes from a large-scale study of guidance programs in Minnesota by Tamminen and Miller (1968), who factor analyzed the interrelationships among a variety of so-called "outcome' variables. These included the Attitude Scale and such measures and indices as "academic self-concept" (Bill's Index of Adjustment and Values), "underachievement" (discrepancy between ability and achievement), and "unrealistic vocational choice" (discrepancy between ability and vocational choice). For 1116 male and female high school seniors, a bipolar factor was identified comprised of the following variables (loadings in parentheses): underachievement (.703), unrealistic vocation-

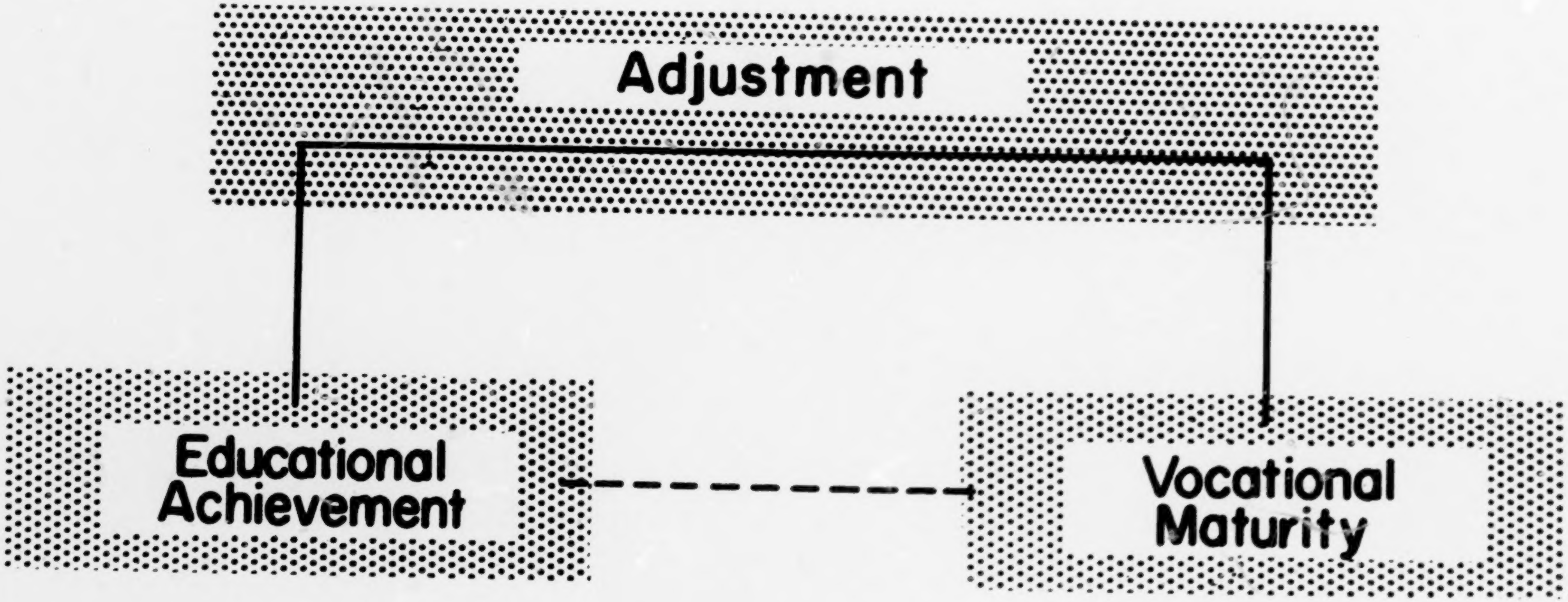

Fig. 8. Adjustment as a general dimension of development in relation to educational achievement and vocational maturity.

al choice (.408), academic self-concept (.464), and vocational maturity (-.407). Tamminen and Miller (1968, p. 99) interpret this factor as one defining "Vocational Immaturity and Underachievement":

"The factor does not represent _just_ underachievement or immaturity, but a situation in which students are in fact vocationally immature underachievers, who (perhaps because of this) tend not to go on to college. In light of Brookover's finding that academic self-concept affects one's achievement relative to ability, it is interesting to note that there is a secondary but very substantial (.02 level) _negative_ loading into this underachievement factor from the variable entitled 'academic self-concept'. Also lending support to the 'immaturity' interpretation is the loading from the item indicating unrealistically high vocational aspirations relative to measured ability (and of course, even higher relative to achievement)."

Here are data, then, which corroborate Crites and Semler's finding of a relationship between adjustment and vocational maturity and which suggest a further explication of it. If adjustment is conceived of as an outcome variable, i.e., the extent to which an individual fulfills his potentialities (Shoben, 1957; Super, 1957), and if maturity of vocational attitudes is a necessary condition for the effective realization of an individual's capacities, then theoretically it would be expected that the two variables would be related.

In addition to their factor analysis, Tamminen and Miller (1968) performed a multiple regression analysis of the relationship between vocational attitude maturity, as the criterion variable, and certain guidance input and situational factors, as predictors. They obtained an _R_ of .60 between the Attitude Scale and the following variables: adequacy of guidance facilities, number of years of guidance in school (-), high school press for estheticism-humanism, student press for intellectualism-competition, size of town, and scholastic aptitude. For the factorial variate of "Vocational Immaturity and Underachievement", the R was .69 with discontented counselor-unimproved program (-), academic atmosphere (-), and low ability. Two similar analyses, but with different predictor variables, have also been reported. Cover (1968) found an R of .53 between measures of alienation (such as meaninglessness, social isolation, and powerlessness), previous work experience, post-high school decision, and the School and College Ability Test (SCAT), on the one hand, and the Attitude Scale, on the other. Miller (1968) computed Rs for both the integrated and segregated Indian youth in his study of cultural variables related to their vocational maturity, but obtained a significant relationship only for the integrated. The multiple correlation for these Ss between the Attitude Scale and such predictors as home stability, socioeconomic status, geographical isolation, etc., was .52 ($p < .01$), with mother's education as the single largest contributor (.39).

Comment. If the theoretical significance or usefulness of a concept is evaluated by the number of empirical relationships into which it meaningfully enters (Bergmann, 1957), then the variable of maturity of vocational attitudes can be considered as one which is increasingly accruing significance or usefulness. As a measure of this concept, the Attitude Scale has been shown to bear relationships to a variety of intellective, nonintellective, outcome, and composite variables. It also fits an emerging (inductive) model of development in adolescence, in which adjustment is a suprafactor or general dimension, and achievement and vocational maturity are more specific aspects of the overall process. Further conceptual as well as empirical work needs to be done, however, on the stimulus variables which affect or influence the maturity of vocational attitudes. Most of the research which has been completed on these factors in relation to the Attitude Scale has yielded negative findings.

Applied Research

Studies which can be classified as applied research have all had one aspect in common: some independent variable has been manipulated, with an appropriate control group, in order to assess it effects upon the maturity of vocational attitudes. These independent variables have been of two kinds: some type of counseling experience, either individual or group, or some variation in a didactic experience, such as an occupational information course. Of the counseling studies, three have produced positive findings. Using a Solomon Four-Group Design, in which the possible confounding of pretesting with the experimental manipulation could be determined, Asbury (1967) compared counseled and uncounseled disadvantaged eighth graders ($\underline{N}$ = 108) from the Kentucky Appalachian region and found increases on the Attitude Scale for those counseled $\underline{S}$s who had been pretested. In other words, there was an interaction among these variables, indicating that the counseling had a significant effect ($\underline{p} < .01$) when it was preceded by administration of the Attitude Scale. Similarly, Bovee (1967) has reported significant gains ($\underline{p} < .01$) in vocational attitude maturity for two experimental groups, one with precounseling-plus-counseling and the other with counseling only, as compared with an uncounseled control group in a Pre- Posttest design. The increases in the Attitude Scale means were from 38.61 to 40.77 and from 37.17 to 39.10, respectively, for the $\underline{E}$ groups, and from 38.07 to only 38.16 for the $\underline{C}$ group. The third study was conducted by Gilliland (1966), who also used the Pre- Posttest design, but with stratification by sex within both the experimental (7 males, 7 females) and control (8 males, 8 females) groups. The Ss were tenth through twelfth grade Negro high school students in the Oak Ridge, Tennessee, school system. The treatment consisted of 36 one-hour weekly group counseling sessions, in which the Ss discussed their feelings about school and work. A "gains" analysis, based upon differences between pre- and posttest VM scores, indicated significantly greater vocational maturity ($p < .01$) for the E group after the counseling. There were no sex differences, i.e., the results were the same for males and females.

In contrast, there have been four other studies of counseling which have not shown that it has an effect upon the maturity of vocational attitudes. As part of a comprehensive evaluation of guidance services in selected New York City schools, Guerriero (1967) administered the Attitude Scale before and after the school year to 143 male experimental Ss, who received "intensive vocational counseling", and 111 male control Ss, who were not specially treated. All students, whether Experimentals or Controls, could avail themselves of the regular counseling services in their schools, however, which may account for the absence of significant "gains" differences between them. In other words, although the Controls did not receive the treatment, they may have been counseled, thus compensating for the effects of the independent variable on the Experimentals. Myers (1966) also pre- and posttested over a prolonged period of time, approximately seven months, but the intervening experience for his 49 male and female 10th and 11th graders in the experimental group was participation in a Neighborhood Youth Corps project, with adjunctive counseling. He found no significant differences in "gains" as compared with an equivalent control group ($\underline{N} = 49$), but it is difficult to conclude whether this finding was attributable to the ineffectiveness of the counseling or some extraneous variable, since these were all confounded in the treatment. Furthermore, as in Guerriero's study, the Controls had the opportunity for counseling through the established guidance program in the schools. Still another Pre- Posttest study was conducted by Williams, B.F. (1967), who investigated hypothesized differential effects of group and individual counseling, in all possible combinations, in comparison with no counseling. The differences among these various treatments were nonsignificant, with the Attitude Scale as the dependent variable, but he states that there was a "ceiling effect" on the pretest due to high initial VM scores. As a consequence, the range for "gains" on posttest was restricted and the possibility of group differences reduced. A Posttest Only design was chosen by Carey (1965) to compare two randomly constituted groups ($\underline{N} = 72$ in each) on the effects of a test summary sheet. The Experimentals were counseled and received a written summary of their test results, whereas the Controls were just counseled. There was no significant difference between the groups after the treatment, possibly because it was not potent enough to add to the effects of the counseling.

Whereas in the counseling studies the focus was upon the individual's attitudes and feelings about self, education, and vocation, in the research on didactic experiences as the independent variable it has been upon his cognitions of school and work. The general hypothesis has been that exposure to appropriate occupational and psychological information would enhance the maturity of vocational attitudes. In a study by Goodson (1969), he found substantiation for this expectation. A "gains" analysis in a Pre- Posttest design, with the Attitude Scale as the measure of the dependent variable, established that there were significant differences (.05 and .01 levels) between the control group (N = 72) and three experimental groups (N = 52 each): (1) Ss who met in a large group and received occupational and educational information; (2) Ss who met in a large group but information was supplemented with self-analysis of test scores; and, (3) Ss who met in small groups (7 each) and engaged in self-analysis, with informal presentation of information. The Ss were first semester Freshmen at Brigham Young University, who registered for a seven-week college orientation program. In another experiment, Schmieding and Jensen (1968) assessed the effects of a 22-hour occupations class, extending over an 8-week period, upon the VM scores of 78 eleventh and twelfth grade American Indian students, divided into an experimental and control group of 34 Ss each. A Posttest Only analysis revealed no significant differences between the experimental and control group means, however, leading the investigators to conclude that "...it would appear that short-term treatment has a limited influence on firmly established impressions and attitudes" (Schmieding & Jensen, 1968, p. 122). This conclusion may be valid, but greater confidence could be placed in it, if the proportions of eleventh and twelfth graders in the E and C groups had been determined, since these two grades differ considerably in their average VM scores. In other words, if there was a disproportionate number of twelfth graders, with presumably higher Attitude Scale scores, in the C group, then even marked gains in the E group might have been obscured by comparing just the posttest means--hence one of the advantages of the Pre- Posttest design, viz., to check the equivalence of the E and C groups on pretest. In the last study of this kind, negative findings were also obtained, but again a question can be raised concerning the analysis. Shirts (1966) compared the pre- and posttest means of an experimental group (N = 86) of sixth graders, which had played the Life Career Game (Boocock, 1964), with a control group (N = 127) and obtained nonsignificant ts. The appropriate analysis, however, would have used "gain" scores, as Shirts (1965) had originally proposed, since they would control for whatever pretest differences there were on the Attitude Scale between the E and C groups, whether significant or not.

Comment. Whenever results are both positive and negative, as they have been in the applied research on maturity of vocational attitudes, it is difficult to make recommendations concerning the efficacy of the independent variables. Uncontrolled factors may have produced the positive as well as the negative findings, although the inclination is to question the latter more than the former. Replications of both should be conducted, improving the experimental designs where indicated to achieve greater control and precision. The methodological and statistical "flaws" which have been pointed out in the studies yielding negative results should be corrected before they are replicated, and the positive results of the other studies should be interpreted cautiously until they are reproduced. Probably the best conclusion that can be drawn at present is that, although some treatments have been shown to have a salutary effect upon the maturity of vocational attitudes, others have not been effective, and further research is needed.

CHAPTER 4

DISCUSSION

It should be clearly understood that most of the research which has been conducted on the Attitude Scale has been cross-sectional in design. Not until longitudinal data currently being analyzed in VDP and by other investigators are available for comparison can conclusions be drawn concerning developmental trends in vocational attitudes. Nevertheless, the accumulated results of the studies summarized in the previous chapter have answered several psychometric and theoretical questions about vocational attitude maturity viewed at specific points-in-time during adolescence. In particular, it is now well-established (1) that individual differences in the maturity of vocational attitudes can be objectively and reliably measured with the Attitude Scale of the Vocational Development Inventory and (2) that this scale enters into a number of theoretically meaningful and empirically useful relationships with other variables. Some conceptual and psychometric issues have been raised, however, with regard to the Attitude Scale both as an operational definition of vocational maturity and as an instrument for its measurement which need further explication and clarification. The discussion which follows in this chapter deals with these issues and suggests how further research on them, where indicated, might be pursued.

The Definition of Vocational Maturity

The Attitude Scale was developed from a model for the measurement of vocational maturity (Crites, 1961) which was predicated upon two propositions. First, it was reasoned that such a measure should combine the best features of the age- and point-scale models of test construction which had been used in the assessment of intelligence, the Stanford-Binet being an exemplar of the former and the WAIS of the latter. Second, it was argued that any measure of a developmental variable should be systematically (either linearly or monotonically) related to time. What these two precepts implied for the construction of the Attitude Scale was that its items had to be (1) conceptually and linguistically meaningful in terms of contemporary definitions of vocational maturity and (2) functionally and significantly related to age and/or grade groupings. This approach to test construction, which was conceived to eliminate the "surplus meaning" of rationally devised instruments and the theoretical meaninglessness of empirically devised scales, was subsequently referred to as the rational-empirical method (Crites, 1965a). That the Attitude Scale approximates the desiderata stipulated by this model for the measurement of vocational maturity can be judged from the empirical findings which have been gathered on it. Because of the manner in which it was standardized, it is comprised only of items whose content is both genotypically and phenotypically relevant to the concept of vocational maturity and which are monotonically related to grade. Furthermore, research on its "content" validity as determined by judges and its relationships to other variables suggests that the Attitude Scale has some salience and usefulness as a measure of at least one aspect of vocational maturity, viz., the dispositional response tendencies associated with career decision-making.

Super (1969) has criticized the development of the Attitude Scale, however, primarily because of the trend demonstrated in its standardization for item endorsements to shift from predominantly True responses in the lower grades to largely False responses in the upper grades. Referring to the requirement that measures of developmental variables be systematically related to time,[1] he states that:

> "In the Attitude Inventory [sic] this led to unexpected results, for vocational maturity appears empirically to consist of learning to say 'no'. But an increasingly consistent negative attitude hardly satisfies a logical or psychological definition of maturity, vocational or otherwise. The simple logic of chronology on which Crites counted heavily for early practical results appears, therefore, to have led into a blind alley" (Super, et al., 1969, p. 12).

In commenting upon this criticism, Holland (1969, p. 16) takes the opposite position:

> "I disagree completely that the Crites Vocational Development Inventory (VDI) Scale has led to a 'blind alley'. To the contrary, the VDI provides the only simple, practical measure of what Super calls 'vocational maturity', so that researchers of different persuasions can examine the concept for many purposes."

Continuing the dialogue on the issue, Super (1969,p. 35) clarified his concern about the Attitude Scale as follows:

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[1] The complete quotation, the last sentence of which this summary statement paraphrases, reads as follows: "The inventory method [for the measurement of vocational maturity] is that used by John Crites (1965a) in his attempts to refine and study the concept of vocational maturity. His logical analysis of vocational maturity carried that of the Career Study a little further, and like that of Gribbons and Lohnes, built on the CPS analysis of 9th grade data. But it did not, naturally, take advantage of the later results of the other projects, and it relied heavily on age norms for its scoring." (Super, et al., 1969, p. 12).

"On the VDI, perhaps I am too harsh. My fear is that a simplistic approach (overemphasis on age differentiation) may have yielded an instrument which, in a misleading appearance of practicality, will falsely discredit the concept rather than help its 'examination for many purposes'. An invalid instrument can make a valid idea seem invalid. I shall be glad to be proved wrong, am eager to see others try the VDI, want only to be sure that we do not put all our money on that one horse!"

Several points in Super's observations need clarification and further discussion. The True-to-False response trends in the standardization of the Attitude Scale were not wholly "unexpected" for two reasons: Most of the items in the initial pool had been deliberately written to express immature vocational behaviors, so that progressive changes in attitudes from early to late adolescence could be differentiated.[2] And, there were findings from studies by Tyler (1955) on the interests of fourth graders and Van de Castle (1962) on perceptual immaturity which indicated that children in the 7-12 year age-range tend to respond in an indiscriminately adient or positive or "yea-saying" fashion when their opinions and preferences are elicited, whether the stimulus materials are verbal statements or geometrical designs. Furthermore, vocational development theory would predict trends similar to those which were found in response to the Attitude Scale. Dysinger (1950, pp. 199-200) has pointed out that, in choosing a vocation over the course of adolescence, negative decisions must necessarily be made before positive ones are possible, in order to narrow down the various options which are open to the individual. Similarly, Tyler has stressed "...the exclusion process, which she describes as a rejection of certain vocational fields which clearly sets the limits of future possibilities" (Super & Bachrach, 1957, p. 109). Both empirically and theoretically, then, it may not be as logically or psychologically unsatisfying as Super suggests to define vocational maturity, at least the conative component in it, in terms of an "increasingly consistent negative attitude".

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[2] Given a generalized True response set on the part of younger adolescents, it would not be possible psychometrically to differentiate them from older adolescents, if attitude items were written in the mature form, since the keyed response would also be True. In other words, both groups of adolescents would tend to endorse the items as True--the younger because of their immaturity and the older because of their maturity.

That this approach to the measurement of vocational maturity should be considered "simplistic", because of its "overemphasis on age differentiation", also needs clarification. As mentioned above, the rational-empirical model used in conceptualizing and standardizing the Attitude Scale was formulated in order to avoid the simplistic shortcomings of a purely empirical approach to test construction, on the one hand, and the psychometric invalidity of a wholly rational approach, on the other. Never was it intended that any one criterion for item selection would be sufficient to validate the Attitude Scale. After items had been initially selected against age and grade as sine qua non for the measurement of a developmental variable, it was assumed that further technique research on the Attitude Scale would be conducted: "Additional data are necessary to demonstrate the validity of the instrument as a measure of vocational maturity" (Crites, 1961, p. 258). Much of this research has now been completed, as indicated in the previous chapter, and, contrary to Super's conclusion, it does not seem to have led into a "blind alley". Rather, the heuristic value and usefulness of the Attitude Scale as an empirical referent for one aspect of the construct of vocational maturity (Crites, 1965a), viz., the conative component, is well-established, at least upon cross-sectional evidence. If it appears to be a simplistic approach to the measurement of vocational maturity, perhaps it is because the Attitude Scale defines only one aspect of this more comprehensive construct, which encompasses such other variables as choice competencies, choice consistency, and choice realism (see Figure 9).

Implications for further research. Studies currently in progress in VDP and by others (e.g., Westbrook, 1969) are designed to provide measures of these other dimensions of vocational maturity and to investigate their interrelationships. If vocational maturity is a construct, as has been hypothesized (Super, 1955; Crites, 1965a), then the various indices of it should correlate much as is shown in Figure 9. The factorial structure of the construct may change from one age and/or grade level to another, however, as vocational development proceeds. Given the True-to-False response trends in the Attitude Scale, for example, it would be expected that the specific factors it measures, i.e., Involvement, Orientation, Independence, etc., would become more differentiated as the individual matures, possible because he learns to discriminate, as a consequence of differential reward and punishment, among the stimuli he previously responded to in an indiscriminate positive way. To test this hypothesis, laboratory experiments are being initiated in VDP to compare high and low scorers on the Attitude Scale on a series of discrimination learning tasks. If it can be demonstrated that those Ss who are more mature in their

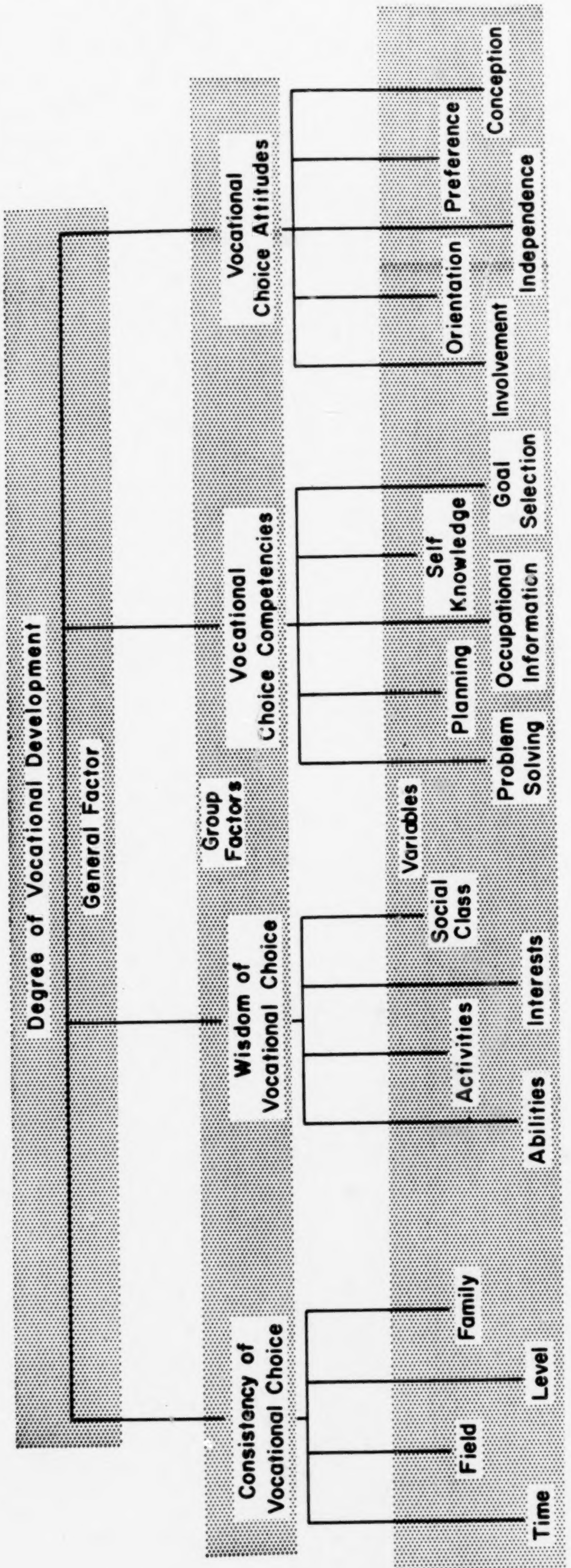

Fig. 9. The construct of vocational maturity.

vocational attitudes can learn to discriminate better (faster, fewer errors) than the less mature, then not only will an aspect of vocational development have been linked to a basic psychological process, but the possibility of remedial discrimination learning for the immature would have direct implications for vocational counseling.

The Relationship of Intelligence to Vocational Maturity

The research summarized in Chapter 3 on intelligence in relation to the Attitude Scale indicated that it is systematically correlated with the maturity of vocational attitudes. Likewise, in both the Career Pattern Study and the Readiness for Vocational Planning research significant correlations have been found between intelligence and various aspects of vocational maturity. Of this relationship, Super and Overstreet (1960, p. 106) observe that:

> "The more intelligent boys /ninth graders/ did have a slight tendency to think more about the choices they needed to make, they tended to accept more responsibility for choice and planning, and while they did not know more about their preferred occupations (perhaps because the brighter boys were younger), and had not made better use of orientation resources, they had done more planning."

They concluded that it was clear that "...vocational maturity as here defined tended to be related to intelligence within this limited age range" (Super & Overstreet, 1960, p. 106). Similarly, Gribbons and Lohnes (1968, p. 43) note that:

> "...RVP performance is somewhat contaminated with verbal ability (about 32 per cent of eighth-grade RVP variance and about 5 per cent of tenth-grade RVP variance), and the best predictor, Evidence for Self-Rating, is the most contaminated of the RVP variables."

They then state that: "RVP scales totally uncorrelated with verbal ability would be difficult to understand, since any judgments of the degree of maturity of verbal performances should be somewhat correlated with the verbal abilities of the performers" (Gribbons & Lohnes, 1968, p. 43).

It can be questioned, however, as some investigators using the Attitude Scale have done, whether it and other measures of vocational maturity are not simply rather inefficient and unrefined indices of intelligence. Such an argument would be a compelling one were it not that the Attitude Scale is related to variables that are unrelated to intelligence. In particular, as the results reviewed in the last chapter make clear, it is associated with positive personality characteristics and good adjustment status, both of which are essentially uncorrelated with intelligence (Crites, 1969). Consequently, it can be concluded that the Attitude Scale measures something other than just intelligence. But, it might still be argued that the common variance between intelligence and vocational attitude maturity nevertheless indicated an intellective component in the latter. This inference would be convincing, however, only if it could be shown that the communality was not a function of extraneous variables. In other words, the correlation of the Attitude Scale with intelligence may be due to the covariation of both variables with a third. It might be hypothesized, for example, that advantageous environmental conditions, such as accepting attitudes on the part of parents (Roe, 1957), might be conducive not only to the development of greater intelligence (Bayley, 1965), but also to the acquisition of more mature vocational attitudes. If the relationship between intelligence and vocational maturity no longer obtains when the effects of parental attitudes are controlled, then the probability that the Attitude Scale measures intelligence would be considerably reduced.

Implications for further research. This hypothesis might be evaluated in several different ways. The most direct test of it would be to gather data on all three variables from the same sample and then partial out parental attitudes, as measured by instruments like the Family Relations Inventory (Brunkan & Crites, 1964) or the Parent-Child Relations Questionnaire (Roe & Siegelman, 1964), from the correlation between a measure of intelligence and the Attitude Scale. A somewhat different problem, but nonetheless of related theoretical interest, would be to select Ss of above-average intelligence, stratify them by levels (high, middle, low) on the Attitude Scale, and compare them with analysis of variance on parental attitudes and possibly other background factors. The hypothesis would be that bright, vocationally mature individuals would have had more favorable or positive familial experiences than the bright, vocationally immature. Still another problem would be to investigate the combined effects of intelligence and vocational attitude maturity upon a variable such as realism of vocational choice. Both intelligence and attitudes are independently related to choice realism, but what their composite relationship is has not been studied. It might be analyzed in at least two different ways, depending upon the statistical assumptions which can be met. If addivity can be assumed in the linear combination of intelligence and VM scores, then they can be related to choice realism in the multiple regression model. If it is suspected, however, that nonaddivity exists, then the appropriate design would be a double-entry table, as shown in Figure 10. Here the criteria of classification are high, average, and low levels on intelligence and attitudes, with choice realism scores as the dependent variable. The expected results, which would be based upon a significant interaction, are indicated by the size of the Rs in the

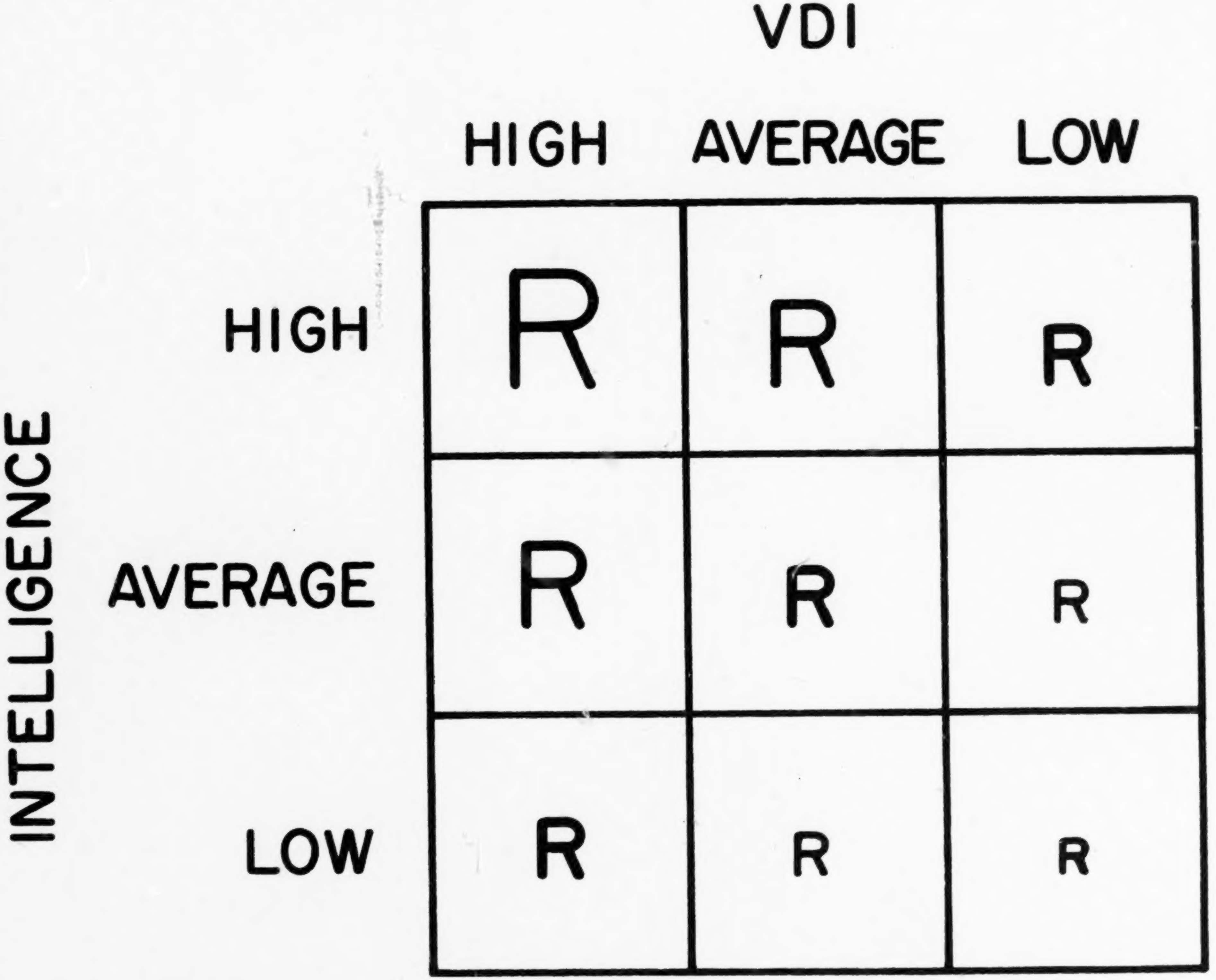

Fig. 10. An experimental design for the study of intelligence and vocational attitude maturity in relation to realism of vocational choice.

cells of Figure 10: the higher the levels of intelligence and maturity of vocational attitudes, the greater the realism of vocational choice.[3]

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[3] As is apparent from Figure 10, significant main effects for both columns and rows would also be expected because of the known relationships of intelligence and attitudes to choice realism.

The Facilitation of Vocational Maturity

Ever since the formulation of vocational development theory in the early 1950s, a central issue in its application to the problems of adolescents has been: can vocational maturity be facilitated? In a direct answer to this question, Super (1953, p. 190) affirmed that "Development through the /vocational/ life stages can be guided", and, in an elaboration upon this proposition, he outlined the rationale and techniques for what he has termed developmental vocational counseling (Super, 1957, pp. 316-320). Similarly, others (e.g., Hershenson, 1969; Ivey & Morrill, 1968) in a host of articles and at the Ohio State National Interdisciplinary Siminar (Campbell, R.E., 1966) have extrapolated the implications of conceptualizing career decision-making as a developmental process for the conduct and implementation of all sorts of programs (counseling, group guidance, occupational orientation courses, etc.) designed to facilitate the vocational maturity of youth. To evaluate the effectiveness of such programs, however, i.e., to demonstrate that they, in fact, increase vocational maturity, has posed several complex problems. Among these, Crites (1964) has identified two which constitute major obstacles: (1) the construction, standardization, and validation of an appropriate measure of vocational maturity as the criterion or dependent variable in studies of counseling and other experiences and (2) the solution of certain problems in experimental design and analysis so that unambiguous, interpretable results can be obtained. Although considerable work remains to be done, particularly on the Competence Test of the VDI, some progress has been made in the measurement of vocational maturity, as the accumulated research on the Attitude Scale attests. Problems in the design and analysis of experiments have persisted, however, and need further clarification.

The applied research which has been conducted with the Attitude Scale can be drawn upon to highlight and illustrate what some of these problems are. First, there are certain methodological flaws which have become apparent upon analysis of these studies. One of these involves the representativeness of the sample which is used to constitute the experimental and control groups. Williams, B.F. (1967) noted in his investigation of individual and group counseling that he failed to obtain significant "gains" from pre- to posttest, because his Ss were initially above-average in vocational attitude maturity. If they had been more representative, i.e., had a greater range of scores on the Attitude Scale, the "ceiling effect" which Williams found would not have been present. To insure that it is not a factor in an experiment, levels (high, average, low) can be constituted on the dependent variable and then analyzed as a between-subjects source of variance (Lindquist, 1953). A related problem arises, as it did in the study by Schmieding and Jensen (1968), when Ss from different grades are mixed in the subject pool before assignment to the experimental and control groups. Either they should all be drawn from one grade or matched across the groups. Another issue concerns the type of design which is chosen for an experiment. Campbell, D.T. and Stanley (1963) ennumerate three "true" experimental designs: (1) Posttest Only, (2) Pretest-Posttest, and (3) Solomon Four-Group, which is a combination of the first two. All of these designs have been used in research with the Attitude Scale, and all have their merits and shortcomings, but the Solomon Four-Group appears to have the fewest drawbacks. Not only does it provide for pretesting as a check on the equivalence of the experimental and control groups, but it allows for the analysis of the effects of pretesting, which as Asbury (1967) found, may be a significant component of the independent variable.

Second, although a sound design such as the Solomon Four-Group paradigm may be employed, it is nevertheless possible to commit _errors of analysis_ which make the data difficult, if not impossible, to interpret. Probably one of the most common errors is to run pair-wise _t_-tests between means without first conducting the appropriate overall _F_ test (Shirts, 1965). Such a procedure can produce spuriously positive results, because it capitalizes upon chance sampling fluctuations between the means, or it can yield spuriously negative findings, when all possible comparisons are not made or "gain" scores are not used. Another error is to perform a Type I (Lindquist, 1953) analysis of pre- and posttest data when the interest of the investigator is in "gains", the difference being that the former is based upon group means and the latter upon individual scores. Moreover, the "gains" analysis achieves greater precision, since it controls for _any_ differences, even those attributable to random assignment, between the experimental and control groups upon pretest. In other words, it adjusts for individual differences on the dependent variable in the same way that analysis of covariance does for a control variable. One other error which can occur in this type of research should be mentioned: It is the phenomenon of regression to the mean between pre- and posttest when extreme groups are used. If Ss with low Attitude Scale scores, for example, were counseled and then posttested, they would show an increase in vocational maturity, but not necessarily as a function of the counseling. Because of the imperfect correlation between pre- and posttest scores, errors of measurement would be added to the pretest scores on posttest, thus reflecting what is actually a "pseudo-gain" (Campbell, D.T. & Stanley, 1963, pp. 10-12). The control group provides a check on this effect, but it does not "control" it. Consequently, unless it can be assumed that the independent variable is so potent that it will produce significant effects over and above those of regression to the mean, the extreme groups analysis does not have a high likelihood of yielding positive results.

Finally, there has been a problem in defining and selecting the independent variable. Typically, studies in which the Attitude Scale has been the measure of vocational maturity the treatment to which the Experimentals have been exposed has not been explicitly defined operationally or even generally described. Rather, it has simply been referred to as "traditional vocational counseling" or "participation in a Neighborhood Youth Corps project". Furthermore, in some investigations several different independent variables, such as guidance and work-study programs, have been lumped together and considered to be the "treatment". Also of concern in defining the independent variable has been the exposure of the Controls to some experience which is identical or similar to the treatment. Thus, in the studies by Guerriero (1967) and Myers (1966) the control Ss received counseling and guidance through the regular school system at the same time the experimental Ss were engaged in the special activities of the projects. It is not surprising, therefore, that there were no significant differences between the groups: whatever effects the treatments may have had were evidently counteracted by the inadequacy of the controls. Even when adequate controls have been instituted, however, there have been questions which could be raised concerning the selection of some of the independent variables investigated. For example, Carey (1965) expected the distribution of a test summary sheet to his Experimentals to result in significantly greater maturity of vocational attitudes than that attained by his Controls, after both groups had been counseled, but obtained negative findings, possibly because such a treatment is not sufficiently potent to make a difference.

Implications for further research. The ideal experimental design for research on the facilitation of vocational attitude maturity would incorporate, then, the following features: (1) unrestricted range on the dependent variable; (2) *S*s sampled from the same population or stratified on relevant control variables; (3) Solomon Four-Group design to assess effects of pretesting; (4) "gains" analysis of differences between pre- and posttest scores; and, (5) a relevant, potent, operationally defined independent variable, to which only the experimental group is exposed. An attempt to approximate such a design is currently being made in the University Counseling Service (UCS) at the University of Iowa. Based upon a paradigm formulated earlier (Crites, 1964) which would not disrupt the ongoing service activities of the agency, data are being collected according to the flow charted in Figure 11. The Time Blocks are defined by the contacts which clients have with the UCS and the services rendered to them. Clients who are accepted for counseling, rather than being referred elsewhere, and who volunteer to participate in the research project, are assigned randomly to one of three groups: Group I

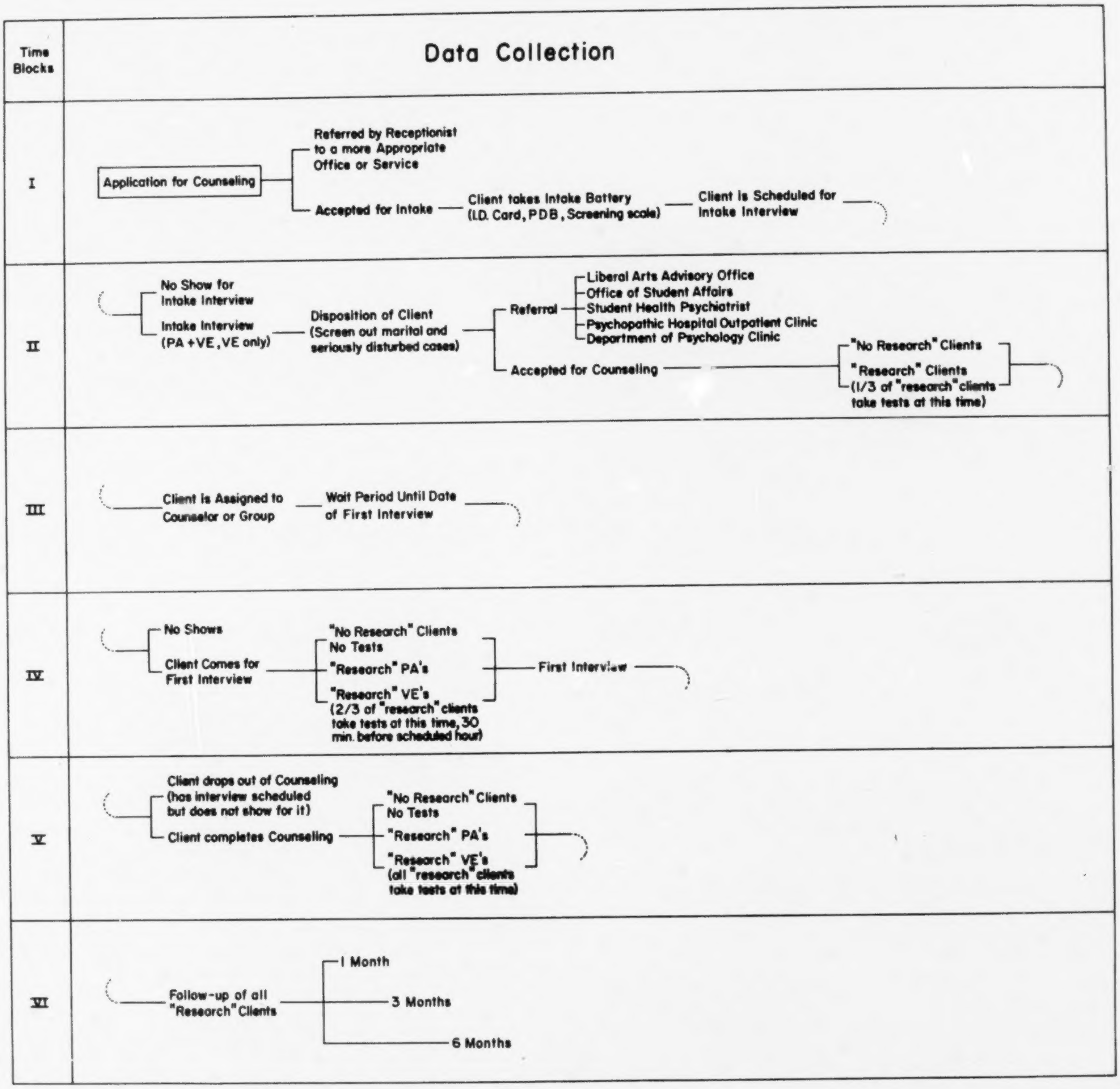
Time Blocks
Data Collection
I
Application for Counseling
Referred by Receptionist to a more Appropriate Office or Service
Accepted for Intake
Client takes Intake Battery (I.D. Card, PDB, Screening scale)
Client is Scheduled for Intake Interview
II
No Show for Intake Interview
Intake Interview (PA+VE, VE only)
Disposition of Client (Screen out marital and seriously disturbed cases)
Referral
Liberal Arts Advisory Office
Office of Student Affairs
Student Health Psychiatrist
Psychopathic Hospital Outpatient Clinic
Department of Psychology Clinic
Accepted for Counseling
"No Research" Clients
"Research" Clients (1/3 of "research" clients take tests at this time)
III
Client is Assigned to Counselor or Group
Wait Period Until Date of First Interview
IV
No Shows
Client Comes for First Interview
"No Research" Clients No Tests
"Research" PA's
"Research" VE's (2/3 of "research" clients take tests at this time, 30 min. before scheduled hour)
First Interview
V
Client drops out of Counseling (has interview scheduled but does not show for it)
Client completes Counseling
"No Research" Clients No Tests
"Research" PA's
"Research" VE's (all "research" clients take tests at this time)
VI
Follow-up of all "Research" Clients
1 Month
3 Months
6 Months

Fig. 11. Flow chart for collecting data in a university counseling service.

takes pre-wait, pre-counseling, and post-counseling tests; Group II takes just pre-counseling and post-counseling tests; and Group III takes only post-counseling tests. All groups take follow-up tests at intervals of one, three, and six months. The tests which are being administered, Barron's (1953) Ego-Strength scale and the Attitude Scale, were selected because they are relevant to the types of problems typically presented by UCS clients, viz., personal-adjustment (PA) and vocational-educational (VE). The independent variable is either PA or VE counseling, as defined operationally by analyses of client-counselor responses taken from interview typescripts. To assess the effects of the counseling, each client will be "yoked" with a control client, so that the pair are matched on the amount of time spent in counseling and in waiting over any given period. In addition, other analyses of interest will be made, such as the comparison of PA and VE clients on the Ego-Strength and Attitude Scales, the correlation between process and outcome variables within groups, and the relationship of certain demographic variables, e.g., age and sex of client, to follow-up data.

Conclusions

The most apparent conclusion which can be drawn from this review and discussion of results on the Attitude Scale is that, in terms of the programmatic research of VDP, it has largely progressed beyond the survey and technique stages and is in the theoretical and applied stages (see Figure 4). The normative and psychometric characteristics of the Attitude Scale have been fairly well-established, and future studies with this instrument will most likely focus upon theoretical and applied problems. In particular, much more extensive work needs to be done under the highly controlled conditions of the laboratory to identify the perceptual and learning processes which are related to the maturity of vocational attitudes. Similarly, in the field, investigations of the factors which facilitate vocational maturity should be conducted, including counseling, occupational information, role playing, simulation games, programmed instruction, visits to business and industry, etc. In short, the time has come for a greater commitment of research resources to the experimental investigation of theoretical and applied problems in the study of vocational maturity.

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APPENDIX A

THE VOCATIONAL DEVELOPMENT INVENTORY

FORM I

Part 1

Directions: Listed below are a number of statements about occupational choice and work. Read each statement and indicate on the separate answer sheet the extent to which you agree with the statement. Mark the appropriate column on the answer sheet whether you "strongly disagree" (Col.1), "disagree" (Col.2), "neither disagree nor agree" (Col.3), "agree" (Col.4), or "strongly agree" (Col.5) with the statement. Use the special pencil which was given to you and be sure your marks are heavy and black. Erase completely any answer you wish to change.

1. How can you expect someone to choose just one of the 20,000 occupations in the U.S.?
2. There are only a few people who really know what they want to do.
3. You have to know what you are good at, and what you are poor at, before you can choose an occupation.
4. There is always time to choose an occupation, even after you start work.
5. Ask others about their occupations, but make your own choice.
6. Sometimes there are so many possibilities, it seems almost impossible to choose an occupation.
7. It's unwise to choose an occupation until you have given it a lot of thought.
8. Vague goals are better than none at all.
9. Once you make an occupational choice, you can't make another one.
10. It is often difficult to carry out your plans.
11. In making an occupational choice, you need to know what kind of person you are.

12. A person can do anything he wants as long as he tries hard.

13. Your occupation is important because it determines how much you can earn.

14. Choosing an occupation is much like shopping for clothes.

15. A consideration of what you are good at is more important than what you like in choosing an occupation.

16. Plans which are indefinite now will become much clearer in the future.

17. If you do the best you can now, the future will take care of itself.

18. Your parents probably know better than anybody which occupation you should enter.

19. Work is worthwhile mainly because it lets you buy the things you want.

20. Work is drudgery.

21. Why try to decide upon an occupation when the future is so uncertain.

22. It's probably just as easy to be successful in one occupation as it is in another.

23. By the time you are 15, you should have your mind pretty well made up about the occupation you intend to enter.

24. There are so many factors to consider in choosing an occupation, it is hard to make a decision.

25. Sometimes you can't get into the occupation you want to enter.

26. Work is like play: it's fun to do.

27. Even if you choose an occupation, you can always change your mind.

28. You can't go very far wrong by following your parent's advice about which occupation to enter.

29. Working an occupation is much like going to school.

30. The best thing to do is to try out several occupations, and then choose the one you like best.

31. There is only one occupation for each individual.

32. The most important consideration in choosing an occupation is whether you like it.

33. Whether you are interested in an occupation is not as important as whether you can do the work.

34. You get into an occupation mostly by chance.

35. It's who you know, not what you know, that's important in an occupation.

36. Choose an occupation which gives you a chance to help others.

37. Choose an occupation, then plan how to enter it.

38. Choose an occupation in which you can someday become famous.

39. An occupation is only as good as the opportunity it gives you to get ahead.

40. When you choose an occupation, select one which people think highly of.

41. If you have some doubts about what you want to do, ask your parents or friends for advice and suggestions.

42. You can wait to choose an occupation until after you have finished your schooling.

43. If you find it hard to choose an occupation, a good solution is to get some military experience for a couple of years and then come to a decision.

44. All things considered, the best occupation is the one you can train for and find employment in.

45. Choose an occupation which allows you to do what you believe in.

46. The most important part of work is the pleasure which comes from doing it.

47. It doesn't matter which occupation you choose as long as it pays well.

48. As far as choosing an occupation is concerned, something will come along sooner or later.
49. Why worry about choosing an occupation when you don't have anything to say about it anyway.
50. The best occupation is one which has interesting work.

FORM I

Part 2

Directions: Listed below are a number of statements about occupational choice and work. Read each statement and indicate on the separate answer sheet the extent to which the statement applied to you. Mark in the appropriate column whether the statement is "very Dissimilar" (Col.1), "dissimilar" (Col.2), "neither dissimilar nor similar" (Col.3), "similar" (Col.4), or "very similar" (Col.5), in comparison with your attitudes and feelings. Use the special pencil which was given to you and be sure your marks are heavy and black. Erase completely any answer you wish to change.

51. Trying to choose an occupation is one of the hardest things I've ever done.
52. How can I be sure that I have chosen the right occupation?
53. Every occupation I consider seems to have some drawback to it.
54. I really can't find any occupation that has much appeal to me.
55. I have little or no idea of what working will be like.
56. When I am trying to study, I often find myself daydreaming about what it'll be like when I start working.
57. The more I think about choosing an occupation, the more confused I become.
58. If I have to go into the military, I think I'll wait to choose an occupation until I'm out.

59. When it comes to choosing an occupation, I'll make up my own mind.

60. The main thing to me in an occupation is the work itself--what I do day-in and day-out.

61. I want to really accomplish something in my work--to make a great discovery or earn lots of money or help a great number of people.

62. I want an occupation which is a little bit better than those of others.

63. I feel I have the ability to do anything I want to do.

64. As long as I can remember I've known what I want to do.

65. I can't understand how some people can be so set about what they want to do.

66. My occupation will have to be one which has short hours and nice working conditions.

67. The occupation I choose has to give me plenty of freedom to do what I want.

68. I want an occupation in which you have a lot of responsibility

69. I want an occupation which gives you a lot of extra benefits, such as bonuses, sick pay, travel expenses, and insurance.

70. I want an occupation which pays good money.

71. I want an occupation with long vacations.

72. Whichever occupation I choose, I want one which gives me a lot of time off.

73. Sometimes I wish I never had to work.

74. I often wonder how successful I'll be in my occupation.

75. It seems to take so long to get into an occupation after you have chosen it.

76. Sometimes I think I'll never reach the occupational goals I have set for myself.

77. I know which occupation I want to enter, but I have difficulty in preparing myself for it.
78. Now that I have a definite occupational goal in mind, I really have something to work towards.
79. I find it hard to establish an occupational goal for myself.
80. I often talk to people about their jobs to learn about them.
81. I have spent a considerable amount of time studying about occupations and the opportunities in them.
82. I know very little about the requirements of occupations.
83. I have so many interests, it's hard for me to choose one occupation.
84. I want to continue my schooling, but I don't know what courses to take or which occupation to choose.
85. What kind of an occupation does a person like me choose? I wish I knew.
86. I know what courses I am going to take in school, but beyond that, my plans are pretty indefinite.
87. I have definite vocational plans and know what I have to do next to eventually enter the occupation of my choice.
88. I spend a lot of time wishing I could do work that I know I cannot ever possibly do.
89. I'm not going to worry about choosing an occupation until I'm out of school.
90. If I can just help others in my work, I'll be happy.
91. There are several occupations that I'm interested in, but I'm not sure I have the ability for them.
92. I guess everybody has to go to work sooner or later, but I don't look forward to it.

93. I often daydream about what I want to be, but I really don't have an occupational choice.

94. The greatest appeal of an occupation to me is the opportunity it provides for getting ahead.

95. Everyone seems to tell me something different, until now I don't know which occupation to choose.

96. I have a pretty good idea of the occupation I want to enter, but I don't know how to go about it.

97. I plan to follow the occupation my parents suggest.

98. No one is going to tell me what occupation to choose!

99. I seldom think about the occupation I want to enter.

100. I often wish that someone would just tell me what to do, instead of having to choose an occupation by myself.

THE VOCATIONAL DEVELOPMENT INVENTORY

FORM II

Part 1

Directions: Listed below are a number of statements about occupational choice and work. Read each statement and decide whether you agree with it or disagree with it. If you agree or mostly agree with the statement, blacken between the lines in the column headed T on the separate answer sheet. If you disagree or mostly disagree with the statement, mark between the lines in the column headed F on the answer sheet. Use the special pencil which was given to you and be sure your marks are heavy and black. Erase completely any answer you wish to change.

Part 2

Directions: Listed below are a number of statements about occupational choice and work. Read each statement and decide whether it is true as applied to you or false as applied to you. If a statement is true or mostly true, as applied to you, blacken between the lines in the column headed T on the separate answer sheet. If a statement is false or not usually true, as applied to you, mark between the lines in the column headed F on the answer sheet. Use the special pencil which was given to you and be sure your marks are heavy and black. Erase completely any answer you wish to change.

Note. The items in Forms I and II were identical; only the directions, as cited above, were different.

THE VOCATIONAL DEVELOPMENT INVENTORY

FORM III

Directions: Listed below are a number of statements about occupational choice and work. Read each statement and decide whether you agree with it or disagree with it. If you agree or mostly agree with the statement, blacken the circle in the column headed T on the separate answer sheet. If you disagree or mostly disagree with the statement, blacken the circle in the column headed F on the answer sheet. Be sure your marks are heavy and black. Erase completely any answer you wish to change.

1. You have to know what you are good at, and what you are poor at, before you can choose an occupation.
2. Ask others about their occupations, but make your own choice.
3. It's unwise to choose an occupation until you have given it a lot of thought.
4. Once you make an occupational choice, you can't make another one.
5. In making an occupational choice, you need to know what kind of person you are.
6. A person can do anything he wants as long as he tries hard.
7. Your occupation is important because it determines how much you can earn.
8. A consideration of what you are good at is more important than what you like in choosing an occupation.
9. Plans which are indefinite now will become much clearer in the future.
10. Your parents probably know better than anybody which occupation you should enter.
11. Work is worthwhile mainly because it lets you buy the things you want.

12. Work is drudgery.

13. Why try to decide upon an occupation when the future is so uncertain.

14. It's probably just as easy to be successful in one occupation as it is in another.

15. By the time you are 15, you should have your mind pretty well made up about the occupation you intend to enter.

16. There are so many factors to consider in choosing an occupation, it is hard to make a decision.

17. Sometimes you can't get into the occupation you want to enter.

18. You can't go very far wrong by following your parent's advice about which occupation to enter.

19. Working an occupation is much like going to school.

20. The best thing to do is to try out several occupations, and then choose the one you like best.

21. There is only one occupation for each individual.

22. The most important consideration in choosing an occupation is whether you like it.

23. Whether you are interested in an occupation is not as important as whether you can do the work.

24. You get into an occupation mostly by chance.

25. It's who you know, not what you know, that's important in occupation.

26. Choose an occupation which gives you a chance to help others.

27. Choose an occupation, then plan how to enter it.

28. Choose an occupation in which you can someday become famous.

29. If you have some doubts about what yoy want to do, ask your parents or friends for advice and suggestions.

30. Choose an occupation which allows you to do what you believe in.

31. The most important part of work is the pleasure which comes from doing it.
32. It doesn't matter which occupation you choose as long as it pays well.
33. As far as choosing an occupation is concerned, something will come along sooner or later.
34. Why worry about choosing an occupation when you don't have anything to say about it anyway.
35. The best occupation is one which has interesting work.
36. I really can't find any occupation that has much appeal to me.
37. I have little or no idea of what working will be like.
38. When I am trying to study, I often find myself daydreaming about what it'll be like when I start working.
39. If I have to go into the military, I think I'll wait to choose an occupation until I'm out.
40. When it comes to choosing an occupation, I'll make up my own mind.
41. I want to really accomplish something in my work--to make a great discovery or earn lots of money or help a great number of people.
42. As long as I can remember I've known what I want to do.
43. I can't understand how some people can be so set about what they want to do.
44. My occupation will have to be one which has short hours and nice working conditions.
45. The occupation I choose has to give me plenty of freedom to do what I want.
46. I want an occupation which pays good money.
47. I often wonder how successful I'll be in my occupation.

48. I know which occupation I want to enter, but I have difficulty in preparing myself for it.

49. I know very little about the requirements of occupations.

50. I want to continue my schooling, but I don't know what courses to take or which occupation to choose.

51. I spend a lot of time wishing I could do work that I know I cannot ever possibly do.

52. I'm not going to worry about choosing an occupation until I'm out of school.

53. If I can just help others in my work, I'll be happy.

54. I guess everybody has to go to work sooner or later, but I don't look forward to it.

55. I often daydream about what I want to be, but I really don't have an occupational choice.

56. The greater appeal of an occupation to me is the opportunity it provides for getting ahead.

57. Everyone seems to tell me something different, until now I don't know which occupation to choose.

58. I have a pretty good idea of the occupation I want to enter, but I don't know how to go about it.

59. I plan to follow the occupation my parents suggest.

60. I seldom think about the occupation I want to enter.

THE VOCATIONAL DEVELOPMENT INVENTORY

FORM IV

Directions: There are a number of statements about occupational choice and work listed in this booklet. Occupational choice means the kind of job or work that you think you will probably be doing when you finish all of your schooling.

If you agree or mostly agree with the statement, use your pencil to blacken the circle in the column headed T on the separate answer sheet. If you disagree or mostly disagree with the statement, blacken the circle in the column headed F on the answer sheet. Be sure your marks are heavy and black. Erase completely any answer you wish to change.

1. Once you choose a job, you can't choose another one.
2. In order to choose a job, you need to know what kind of person you are.
3. I plan to follow the line of work my parents suggest.
4. I guess everybody has to go to work sooner or later, but I don't look forward to it.
5. A person can do any kind of work he wants as long as he tries hard.
6. I'm not going to worry about choosing an occupation until I'm out of school.
7. Your job is important because it determines how much you can earn.
8. Work is worthwhile mainly because it lets you buy the things you want.
9. The greatest appeal of a job to me is the opportunity it provides for getting ahead.
10. I often daydream about what I want to be, but I really haven't chosen a line of work yet.
11. Knowing what you are good at is more important than knowing what you like in choosing an occupation.

12. Your parents probably know better than anybody which occupation you should enter.
13. If I can just help others in my work, I'll be happy.
14. Work is dull and unpleasant.
15. Everyone seems to tell me something different, until now I don't know which kind of work to choose.
16. I don't know how to go about getting into the kind of work I want to do.
17. Why try to decide upon a job when the future is so uncertain.
18. I spend a lot of time wishing I could do work that I know I cannot ever possibly do.
19. I don't know what courses I should take in school.
20. It's probably just as easy to be successful in one occupation as it is in another.
21. By the time you are 15, you should have your mind pretty well made up about the occupation you intend to enter.
22. There are so many things to consider in choosing an occupation, it is hard to make a decision.
23. I seldom think about the job I want to enter.
24. It doesn't matter which job you choose as long as it pays well.
25. You can't go very far wrong by following your parents' advice about which job to choose.
26. Working is much like going to school.
27. I am having difficulty in preparing myself for the work I want to do.
28. I know very little about the requirements of jobs.
29. The job I choose has to give me plenty of freedom to do what I want.
30. The best thing to do is to try out several jobs, and then choose the one you like best.

31. There is only one occupation for each person.

32. Whether you are interested in a particular kind of work is not as important as whether you can do it.

33. I can't understand how some people can be so set about what they want to do.

34. As long as I can remember I've known what kind of work I want to do.

35. I want to really accomplish something in my work-to make a great discovery or earn lots of money or help a great number of people.

36. You get into an occupation mostly by chance.

37. It's who you know, not what you know, that's important in a job.

38. When it comes to choosing a job, I'll make up my own mind.

39. Choose an occupation which gives you a chance to help others.

40. When I am trying to study, I often find myself daydreaming about what it will be like when I start working.

41. I have little or no idea of what working will be like.

42. Choose an occupation, then plan how to enter it.

43. I really can't find any work that has much appeal to me.

44. Choose a job in which you can someday become famous.

45. If you have some doubts about what you want to do, ask you parents or friends for advice and suggestions.

46. Choose a job which allows you to do what you believe in.

47. The most important part of work is the pleasure which comes from doing it.

48. I keep changing my occupational choice.

49. As far as choosing an occupation is concerned, something will come along sooner or later.

50. Why worry about choosing a job when you don't have anything to say about it anyway.

APPENDIX B

SEVENTH GRADE
PERCENTILE NORMS

VM RAW SCORE	IOWA	TEXAS	TENNESSEE	OHIO
50				
49				
48				
47				
46				
45				
44				
43	99			
42	97			
41	94			
40	90	99	99	
39	85	99	97	
38	80	97	96	
37	73	95	93	
36	66	91	89	99
35	58	87	85	99
34	50	82	80	98
33	42	77	72	95
32	37	71	65	93
31	31	62	57	88
30	26	55	48	84
29	21	50	45	78
28	17	42	39	70
27	13	36	31	62
26	11	30	25	54
25	8	23	21	48
24	6	18	15	41
23	5	15	11	37
22	4	11	7	32
21	3	9	4	28
20	2	6	2	23
19	1	5	1	20
18		3	1	17
17		3	1	14
16		2	1	12
15		1	1	10
14				7
13				5
12				4
11				3
≤10				2
N	657	575	568	277
MEAN	33.25	29.28	30.13	24.70
S.D.	5.65	5.53	5.08	6.22
RANGE	19-43	15-40	15-40	2-36

EIGHTH GRADE
PERCENTILE NORMS

VM RAW SCORE	IOWA	TEXAS	PENNSYL-VANIA	TENNESSEE	CALIF-ORNIA	OHIO
45				99		
44	99		99	99		
43	96	99	99	99	99	
42	92	99	98	98	98	
41	87	99	96	98	96	
40	82	97	93	96	94	99
39	76	96	88	93	90	90
38	68	93	83	89	84	98
37	60	89	78	83	79	96
36	53	85	70	75	72	93
35	46	79	63	70	63	88
34	37	72	54	63	57	84
33	30	66	46	57	48	81
32	24	60	40	47	41	77
31	19	55	34	40	32	72
30	15	49	28	35	24	66
29	11	42	23	31	20	60
28	10	36	19	24	16	53
27	8	29	15	19	11	49
26	7	24	11	14	8	39
25	5	20	8	11	6	32
24	4	15	6	10	4	27
23	3	12	4	7	3	20
22	2	10	3	5	2	18
21	2	8	2	4	2	16
20	1	6	1	3	1	11
19		4	1	2		8
18		3	1	2		6
17		2		2		4
16		1		1		4
15		1				4
14		1				2
13		1				2
12		1				1
11		1				1
≤ 10		1				1
N	601	575	1267	500	579	225
MEAN	35.07	30.40	33.37	33.20	33.43	27.84
S.D.	5.44	6.08	5.26	5.60	5.01	6.10
RANGE	20-44	10-43	18-44	16-45	20-43	10-40

NINTH GRADE
PERCENTILE NORMS

VM RAW SCORE	IOWA	TEXAS	PENNSYL-VANIA	TENNE-SSEE
47			99	
46			99	
45	99		99	
44	97		99	
43	94	99	99	
42	89	99	97	99
41	83	97	94	98
40	76	94	91	96
39	67	90	85	92
38	57	85	78	86
37	49	79	70	81
36	41	73	61	73
35	35	65	52	66
34	28	58	44	58
33	22	51	36	51
32	16	45	29	43
31	13	40	23	34
30	10	35	18	27
29	7	29	14	21
28	5	24	11	17
27	4	18	8	14
26	3	15	5	10
25	2	12	4	7
24	2	9	3	6
23	1	7	2	6
22		5	2	4
21		4	1	4
20		3	1	2
19		2	1	2
18		2		1
17		1		
16		1		
15		1		
14		1		
13				
12				
11				
≤ 10				
N	703	582	1273	484
MEAN	36.50	32.59	34.69	32.97
S.D.	4.82	5.69	4.93	5.13
RANGE	23-45	14-43	19-47	18-42

NINTH GRADE PERCENTILE NORMS

VM RAW SCORE	CALIFORNIA	OHIO
45	99	
44	99	
43	99	
42	98	99
41	95	98
40	89	98
39	83	96
38	75	91
37	67	88
36	58	86
35	50	80
34	43	73
33	35	64
32	29	60
31	23	55
30	18	49
29	14	42
28	10	36
27	8	28
26	6	20
25	5	16
24	3	12
23	2	9
22	2	7
21	1	5
20	1	5
19		3
18		3
17		2
16		1
15		
14		
13		
12		
11		
≤ 10		
N	526	202
MEAN	34.86	30.71
S.D.	4.87	5.54
RANGE	20-45	16-42

TENTH GRADE
PERCENTILE NORMS

VW RAW SCORE	IOWA	TEXAS	TENNESSEE	CALIFORNIA
47	99			
46	98			
45	97		99	99
44	93		97	99
43	88	99	96	99
42	83	99	94	97
41	76	97	91	95
40	66	94	88	90
39	54	90	85	85
38	45	85	80	78
37	36	79	71	72
36	31	73	61	63
35	24	65	56	55
34	20	58	43	45
33	15	51	36	38
32	12	45	31	32
31	8	40	25	27
30	6	35	22	22
29	5	29	15	17
28	4	24	13	13
27	3	18	9	11
26	1	15	8	9
25		12	5	7
24		9	5	5
23		7	3	4
22		5	3	3
21		4	2	3
20		3	1	2
19		2		2
18		2		1
17		1		1
16		1		
15		1		
14		1		
13				
12				
11				
≤10				
N	213	139	390	948
MEAN	37.81	34.10	34.63	35.21
S.D.	4.58	5.27	5.23	5.44
RANGE	26-47	14-43	20-45	17-46

ELEVENTH GRADE
PERCENTILE NORMS

VM RAW SCORE	IOWA	TEXAS	PENNSYL-VANIA	OREGON	TENNE-SSEE	CALIF-ORNIA
47	99			99		99
46	98			99		99
45	97	99		99		99
44	95	96	99	97	99	98
43	90	94	96	94	96	96
42	82	88	91	91	93	93
41	76	81	86	86	85	89
40	69	72	75	80	80	82
39	62	66	61	73	75	76
38	55	61	59	65	68	67
37	48	53	50	57	62	60
36	40	45	42	48	52	52
35	32	40	34	41	44	44
34	25	33	29	34	37	37
33	18	27	23	26	33	31
32	14	22	17	21	27	25
31	11	15	14	15	22	21
30	7	14	11	11	19	17
29	5	8	9	9	15	13
28	3	3	5	7	9	10
27	2	3	4	4	6	7
26	1	1	3	3	5	6
25		1	3	2	5	4
24		1	3	1	4	3
23		1	1	1	3	2
22		1	1	1	2	2
21		1	1		2	1
20			1		2	1
19					1	1
18						1
17						1
16						1
15						1
14						
13						
12						
11						
≤10						
N	131	93	149	514	393	923
MEAN	38.16	36.75	36.76	36.29	35.54	35.58
S.D.	4.72	4.95	4.81	5.03	5.33	5.45
RANGE	26-47	21-45	20-44	22-47	19-44	15-47

TWELFTH GRADE
PERCENTILE NORMS

VM RAW SCORE	IOWA	PENNSYL-VANIA	OHIO	OREGON	TENNE-SSEE	CALIF-ORNIA
48		99				99
47	99	98		99		99
46	97	97		99	98	99
45	95	97	99	98	96	98
44	90	91	95	95	94	97
43	84	84	92	91	91	93
42	78	77	90	85	86	89
41	67	72	81	79	78	83
40	55	63	68	69	70	75
39	44	51	60	61	63	68
38	36	42	51	52	54	61
37	30	32	42	44	50	55
36	25	25	33	37	43	46
35	18	19	26	30	38	38
34	10	16	19	24	28	32
33	7	14	18	19	21	25
32	5	11	13	16	14	21
31	2	8	13	12	13	16
30		7	10	10	11	13
29		4	9	7	10	10
28		1	8	5	10	7
27		1	6	3	9	6
26		1	3	2	7	4
25		1	3	2	5	4
24			1	2	4	3
23			1	1	1	3
22				1		2
21				1		2
20						2
19						1
18						1
17						1
16						1
15						
14						
13						
12						
11						
≤10						
N	143	118	119	753	291	834
MEAN	39.00	38.90	37.59	37.54	37.04	36.43
S.D.	4.00	4.54	4.84	4.97	5.47	5.57
RANGE	31-47	25-48	23-45	21-47	23-46	16-48

THIRTEENTH GRADE
PERCENTILE NORMS

VM RAW SCORES	IOWA	PENNSYL-VANIA	UTAH
47		99	99
46		98	99
45	93	97	94
44	89	94	90
43	78	87	78
42	74	82	73
41	59	72	62
40	48	62	55
39	41	52	44
38	37	43	36
37	33	35	29
36	26	24	19
35	15	17	19
34	7	14	13
33	7	10	10
32	7	7	6
31	4	4	4
30	4	3	1
29		3	
28		2	
27		1	
26		1	
25			
24			
23			
22			
21			
20			
19			
18			
17			
16			
15			
14			
13			
12			
11			
≤ 10			
N	27	429	77
MEAN	39.77	38.86	39.29
S.D.	4.11	4.21	6.01
RANGE	30-45	26-47	30-47